

**CHILDREN, LEARNING AND CHRONIC NATURAL DISASTERS: HOW  
DOES THE GOVERNMENT OF DOMINICA ADDRESS EDUCATION  
DURING LOW-INTENSITY HURRICANES?**

**DISSERTATION**

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# **CHILDREN, LEARNING AND CHRONIC NATURAL DISASTERS: HOW DOES THE GOVERNMENT OF DOMINICA ADDRESS EDUCATION DURING LOW-INTENSITY HURRICANES?**

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By the time today's Grade K students graduate high school in the Commonwealth of Dominica, they will have experienced five major and many low-intensity hurricanes (LIH). Between August and November each year, each hurricane, major or low-intensity, represents a major threat to their safety and schooling. This mixed-method case study investigated how the Government of the Commonwealth of Dominica (GOCD) addressed education during low-intensity hurricanes. I identified and discussed government's assertions, actions and consequences associated with education and LIH. I reviewed ten official documents to identify government's policies and assertions about education and LIH. I interviewed nine key senior or elite officers in the Ministries of Finance, Public Works and Education responsible for handling low-intensity hurricanes to identify their perspectives and actions. I also interviewed ten school principals who experienced Hurricane Dean in 2007 and Hurricane Ophelia in 2011 on their experiences and perspectives. Finally, I inspected ten school buildings to assess the extent to which repairs adhered to building codes and standards as mitigation strategy for LIH. Theoretically, this study proposed an adaptive developmental approach as an anticipatory approach that sustainably incorporates LIH into educational development, planning and operations. Results of this study indicated that government and its agencies adopted a response-recovery approach based on the perception of disasters as "Acts of God" and insufficient local funds to address them. This resulted in proposed externally-based funding strategies that have

not been implemented since announced in 2006. There appears to be the desire to shift to anticipatory mitigation-risk reduction approaches rather than the present response-recovery approach. This would have to be articulated in language that is binding. Institutional and administrative frameworks for addressing low-intensity hurricanes and education were described as not meeting their mission and objectives. The result was a set of administrative failures that cascaded from the national to the ministerial level and onto schools putting children at risk as LIH events unfolded. Principals were left mostly on their own without the appropriate training, support and working communication links to address LIH; unable to safely evacuate students in the case of Hurricane Ophelia. The Ministry of education must become a lead agency in LIH management. The Ministry of Education needs to put in place policies, institutional and financial frameworks for managing education during LIH. This should include LIH professional development for teachers, principals and elite officers; development of school disaster plans; the conduct of regular disaster drills and exercises at schools, and rescheduling lost instruction days. Finally, LIH as chronic events must be incorporated into the plans, budget and operations of the Ministry of Education using the adaptive developmental approach.

**Keywords:** education in emergencies, mixed-method case study; low-intensity hurricanes, adaptive developmental approach.

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## LIST OF ACRONYMS

ABD	Asian Development Bank
ADPC	Asian Disaster Preparedness Center
ADRA	Adventist Relief Agency
ASR	Acute, Stabilization and Reconstruction
AusAID	Australian Agency for International Development
CARICOM	Caribbean Community
CCRIF	Caribbean Catastrophe Risk Insurance Facility
CDB	Caribbean Development Bank
CEP	Consulting Engineers Partners
CERF	Central Emergency Response Fund
CIDA	Canadian International Development Fund
CSEC	Caribbean Secondary Education Certificate
DAG	Disaster Awareness Games
DFID	UK Department for International Development
DFID-CHF	Conflict and Humanitarian Fund
DFID-HRF	Humanitarian Response Fund
DIPECHO	Disaster Preparedness Program
DRFI	Disaster Risk Financing and Insurance
DRRF	Disaster Risk Reduction Fund
ECE	Early Childhood Education
ECHO	European Commission Humanitarian Aid Department
ECHO	European Commission Humanitarian Organization
EFA	Education for All
EPU	Education Planning Unit
EU	European Union
FCAT	Florida Comprehensive Assessment Test
FPN	Fonds de Parrainage Haiti
GCE	General Certificate of Education
GDP	Gross Domestic Product
GFDRR	Global Facility for Disaster Reduction and Recovery
GINIE	Global Information Networks in Education
GOCD	Government of the Commonwealth of Dominica
HIV/AIDS	Acquired Immune Deficiency Syndrome
IASC	Inter-Agency Standing Committee
IDP	Internally Displaced People

IIEP	International Institute Educational Planning
INEE	Inter-Agency Network for Education in Emergencies
IRB	Internal Review Board
ISL	Intermediate Sooner and Later
LAMI	Low and Middle Income
LIH	Low-intensity Hurricanes
MDGs	Millennium Development Goals
NEPO	National Emergency Planning Organization
NGO	Non-Government Organization
NORAG	Norwegian Agency for Development Cooperation
NZAID	New Zealand Agency for International Development
OAS	Organization of American States
ODP	Office of Disaster Preparedness
OCHA	Office for the Coordination of Humanitarian Affairs
OECS	Organization of Eastern Caribbean States
PITT	University of Pittsburgh
PPP	Purchasing Power Parity
PTSD	Post-traumatic Stress Disorder
RCC	Regional Consultative Committee on Disaster Management
RER	Rapid Educational Response
SDC	Swiss Agency for Development and Cooperation
SIDA	Swedish International Development Cooperation Agency
SIDS	Small Island Developing States
TCIP	Turkish Catastrophe Insurance Pool
TEP	Teacher Emergency Packages
UK	United Kingdom
UNESCO	United Nations Educational Scientific and Cultural Organization
UNHCR	United Nations High Commission for Refugees
UNICEF	United Nations Children Fund
USAID	United States Agency for International Development
WAEC	West African Examination Council
WFP	World Food Program

## **1.0 CONTEXTUALIZING EDUCATION EMERGENCIES AND STUDY PURPOSES**

This study investigates how one small island developing state (SIDS),<sup>1</sup> the Commonwealth of Dominica (referred to as Dominica), addressed education during low intensity hurricanes (LIH). The cumulative effects of these low-intensity hurricanes appear to make it difficult for SIDS to cope using their resources alone. Low-intensity hurricanes are tropical storms that do not exceed Category 2 on the Saffir-Simpson Hurricane Scale. They are extremely disruptive and can result in substantial losses to a country's Gross Domestic Product (GDP) (World Bank, 2006). They do not attract wide media attention and international humanitarian assistance, leaving national governments alone to address them.

This investigation is important because a child in Dominica will have experienced five major and several low-intensity hurricanes by the time she graduates out of high school. Every one of these hurricanes presents risks to the lives of children, and disruptions to their schools, instruction and learning. Hurricanes in SIDS damage school facilities. They disrupt access to education, affect negatively the life chances of affected children, and strain the limited financial resources that would have gone to education in these islands. These resources may be required to deal with the impacts.

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<sup>1</sup> SIDS are small islands that are remote from large markets, with high vulnerability to economic and natural shocks beyond domestic control (UNCTAD, 2011: <http://www.unctad.org/Templates/Page.asp?intItemID=3620&lang=1>)

These cyclical conditions make comprehensive educational responses challenging and problematic raising concerns about abilities to secure children's right to education, which is enshrined in the 1989 United Nations Convention on the Rights of the Child. Since 1990, UNESCO, under its goal of Education for All (EFA), has been making concerted efforts to ensure the fulfillment of this right in member states through the attainment of universal primary education by 2015. The United Nations, through its Millennium Development Goals (MDGs), adopted similar goals for primary education. UNESCO, UNICEF, the World Bank and many other multilateral and bilateral organizations continue to assist with the attainment of this goal through the Fast Track Initiative (FTI)<sup>2</sup> and other programs. Nevertheless, evidence indicates that developing countries continue to have difficulties progressing towards its attainment and in fully securing children's rights to education. Inadequate policy planning and implementation, limited financial resources, limited access to schools, poor early childhood development and primary school quality, high repetition and dropout rates, and gender inequities in enrollment and primary school completion continue to undermine educational progress in many countries, including SIDS.

Every child has a right to an education. As with natural disasters, wars, conflicts and calamities exacerbate further slow EFA progress and undermine the rights of children to education. A UNESCO study concluded that manmade and natural disasters had emerged as

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<sup>2</sup> The Fast Track Initiative (FTI) is a partnership of developing countries and donors created to help low-income countries achieve the EFA and the Millennium Development Goal of universal completion of primary education by 2015 (UNESCO, 2010: <http://www.unesco.org/en/education-for-all-international-coordination/themes/funding/fast-track-initiative/>). As of September 21, 2011, the FTI has been renamed the Global Partnership for Education. <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTEDUCATION/0,,contentMDK:20278663~menuPK:617564~pagePK:148956~piPK:216618~theSitePK:282386,00.html>

major barriers to the accomplishment of Education for All (UNESCO, 2000a). The 2011 UNESCO EFA Global Monitoring Report found of the total number of primary school age children in the world not enrolled in school, 28 million (42%) live in countries affected by conflicts (UNESCO, 2011). Oxfam arrived at similar conclusions in its education report (Watkins, 2000).

The absence of peace and stability undermine educational infrastructures and the capacity of states to support basic education (Tawil & Harley, 2003). They destroy and/or disrupt education systems, reverse EFA progress already made, and threaten the safety, security and psychosocial well-being of children, their families and communities. They complicate already dire social and financial challenges that deprioritize education. They divert resources away from education to armed conflicts and the recovery of other social and economic sectors. They trigger education emergencies as countries find it difficult to cope using their resources alone. Educational disruption undermines economic growth and worsens inequities by further excluding those deprived from participating in the benefits of this growth (Watkins, 2000).

Where these emergencies are catastrophic (for example, those triggered by Category 3 to 5 hurricanes), they attract wide media and international humanitarian assistance. Emergencies caused by non-catastrophic events, like low-intensity<sup>3</sup> hurricanes do not attract such assistance. For non-catastrophic events, response and recovery usually remain the full responsibility of affected countries. For these countries, coping is challenging. Moreover, even when

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<sup>3</sup> The Saffir-Simpson Scale measures hurricane intensity based on wind strength. This scale consists of five categories. Categories 1 and 2 are low-intensity. Category 3 is considered devastating, and Category 4 & 5 are classified as catastrophic (NCH, 2010: <http://www.nhc.noaa.gov/sshws.shtml>)

emergencies are catastrophic, in spite of many efforts, education still is not a major priority of international humanitarian responses.

The main purposes of this study is to describe how Dominica addresses the issue of education during these low-intensity hurricanes (LIH), that is, how it addresses the national education policies of donor coordination, resource allocation and service delivery during chronic LIH.

## **1.1 JUSTIFICATION OF THIS STUDY**

My primary motivation for this study is my own experience with Hurricane David in 1979, while a high school student in Dominica. On 29 August 1979, I was preparing to commence my final year in high school when Hurricane David, a Category 5 storm struck. It killed 42 people, destroyed 80% of the housing stock, and left 75% of the island's population homeless. We lost the roof to our home. All of our belongings including my textbooks were destroyed or damaged. We were without electricity for eighteen months. Hurricane David did not destroy my school building but it became a hurricane shelter for nearby residents for four months. I was out of school during that period. School reopened in December, 1979. No counseling support was available for students and teachers. Teaching and other school activities proceeded as usual. Examinations to determine recommendations for the high stakes Caribbean Secondary Education Certificate (CSEC) and General Certificate of Education (GCE) were held as scheduled. Similarly, exams to determine graduation were also held. I flunked both, despite being one of the top students prior to Hurricane David. I did not meet the criteria for graduation: I was given



a certificate of attendance at a school leaving ceremony. Although I eventually performed well at the high stakes CXC and GCE Ordinary Level in June 2008, it was not as well as I or my teachers had expected. I never understood why that happened until twenty years later in 1999. I was conducting an independent study entitled, “The forgotten people of disasters: Children and schooling in the aftermath of Hurricanes,” as part of a Master of Education Degree at the University of Pittsburgh (see Serrant, 1999). As the research unfolded, I understood then the negative impact of hurricanes on student and their academic performance. I wept during the writing process as I re-lived the trauma and the loss. I reflected on the many assumptions my teachers had made about our experiences as students, and their own misunderstanding of children’s resilience and coping skills (and the lack thereof) during and after Hurricane David.

The extensive impact of Hurricane Dean on school infrastructure in Dominica in 2007 motivates this research as well. Hurricane Dean damaged 12 schools, disrupted education for several weeks. My personal experience as a Senior Public Officer at the time allowed me to witness considerable “red tape,” and local politics regarding response and recovery activities, and limited financial and technical capacities that protracted repairs over a 3-4 month period. How the government and the Ministry of Education addressed the events associated with Hurricane Dean may be instructive and requires investigation.

This study seeks to bring education and low-intensity hurricanes (LIH) into mainstream thinking, discourses and research in the emerging field of education emergencies. It provides insights into how finance, public works and education officials in Dominica perceive and address education and LIH. This study is useful for education officials, as it provides information and data for incorporating education emergencies issues into mainstream Ministry of Education policies and planning. Specifically, this study creates the space for considering education and

LIH as a legitimate aspect of education in emergencies and places it on the agenda of international humanitarian and disaster management agencies.

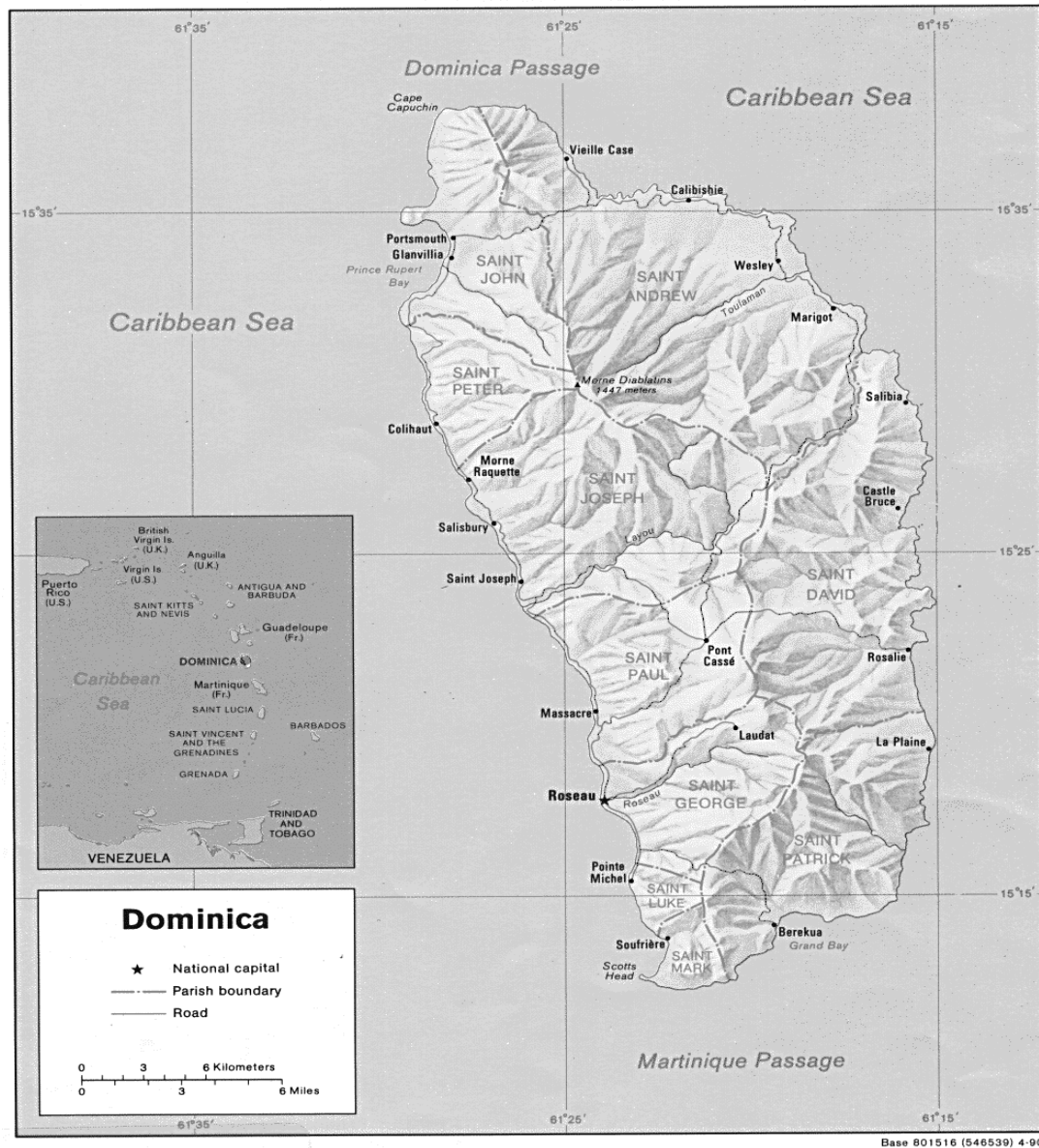
This study gives voice to school principals and their school communities threatened annually by hurricanes and inform policies that prepare schools for dealing with the persistent threat of LIH. It speaks for students, whose education is disrupted, negatively affecting their life chances, which are often dependent on critical high stakes examinations written around the time these emergencies tend to occur. Finally, it encourages the placement of children and their schooling at the center of discourses and actions on education during LIH in Dominica and other small island developing states (SIDS).

## **1.2 STUDY AREA**

Dominica is considered one of the Caribbean countries most vulnerable to disasters (Collymore, 2004, Government of Dominica, 2006; 2012). It is a small island in the Eastern Caribbean (see Figure 1 (inset)); 287 sq. miles in area and located roughly 15<sup>0</sup>N and 61<sup>0</sup>W placing in the path of Atlantic hurricanes.

Dominica is mountainous with the highest peaks rising over 4,000 feet. Because of its rugged topography, Dominica receives up to 300 inches of rain per year in places. Numerous rivers dissect Dominica making it extremely susceptible to landslides and other forms of slope failure. Seventy percent of the island is forested and inaccessible by motorable roads. Much of that forest is protected under the National Parks Act of the Laws of the Commonwealth of Dominica, 1975. One such park, The Morne Trois Piton National Park was designated a World

Heritage Site by UNESCO, which protects the country's foremost watersheds and help to manage the excess rainfall (cite).



**Figure 1.** Map of Dominica as the Study Area and Depicting its Rugged Topography

Because of this ruggedness and inland inaccessibility, most of Dominica's 71,293 people<sup>4</sup> and school facilities occupy the narrow strip of coastland lowlands and river floodplains making them vulnerable to sea-surges and flooding. Figure 1 shows the rugged topography and the coastal location of these communities, including the capital, Roseau.

Economically, Dominica is a middle-income developing country with GDP of \$765.4 million (PPP), GDP per capita of \$10,500 (PPP) and a 2010/2011 annual budget of EC\$346.1 million (US\$127.4M). Roughly, 5 percent of Dominica's GDP and 17% of annual recurrent budget is allocated to education. Eighty percent of educational expenditure goes to salaries and salaries-related allowances compared to 39% for all wages in the public service or 11.8% of GDP (Government of Dominica, 2010).

### **1.2.1 Education in Dominica**

Since 1990, Dominica along with six other member states of the Organization of Eastern Caribbean States (OECS) have been harmonizing their education systems in preparation for a single market and economy that was due 1 August 2011. Foundations of our Future and Pillars for Partnership and Progress have been the blueprints guiding the process coordinated by the OECS Education Development Unit.

The national government is responsible for education and the Ministry of Education and Human Resource Development manages the education system. The Education Act of the Laws of the Commonwealth of Dominica, 1997 clearly outlined this mandate for the Ministry of Education. This Act is also the main policy document governing education in Dominica. Under

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<sup>4</sup> The New Chronicle Vol. XVI No. 3, February 2012 Issue

the Act, the Chief Education Officer is accountable for the management and development of all aspects of education. The Ministry of Education submits an annual budget for education to the Ministry of Finance. The Ministry of Finance determines final budget figures following a process in which Education, like all other ministries, is invited before a Finance panel to defend its budget that covers administration; tertiary, secondary and primary education and supervision of pre-primary education. Pre-primary, early childhood education (ECE) is largely private, with a recent shift in policy in favor of Universal Early Childhood Education. There are 59 primary and 15 secondary schools in Dominica. Fifty primary schools are public and seven are private-assisted, that is, they receive annual subventions from the state. Three primary schools are owned and managed, privately. Of the secondary schools, seven are public, seven are private-assisted and one is private. There are 75 early childhood centers in Dominica.

Most schools in Dominica are considered small in terms of size and enrolments. Data taken from the Education Planning Unit, Ministry of Education & Human Resources, Dominica, show for the 2010/2011 school year, 29 of the 59 primary schools had enrollments of less than 100 students. A further 18 primary schools had enrolments of between 100 and 150 students.

Over 15,000 students are enrolled in primary and secondary schools, accounting for nearly 25% of the population of Dominica (EPU, 2011<sup>5</sup>). In 2005, Dominica attained universal secondary education. This resulted in the expansion of school places and the construction of three new secondary school buildings. In addition to being spaces for learning, 70% of school buildings are also emergency shelters. In 1998, the Organization of American States (OAS) in collaboration with the Government of Dominica and European Commission Humanitarian

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<sup>5</sup> This is taken from the database of the Education Planning Unit (EPU). Data is still being input from the annual questionnaires received from schools.

Organization (ECHO) retrofitted several school buildings under a three-year project to assist in reducing their vulnerability to hurricanes and as hurricane shelters (Government of Dominica and OAS, 1998).

### 1.2.2 Hurricane frequency in Dominica

Data provided by Hurricane City, a website dedicated to providing historical information on hurricane in the Caribbean, revealed that over the last 139 years, 49 hurricanes have either hit directly or brushed Dominica (Williams, 2010). Table 1 shows key hurricane information on Dominica, which according to this table, is brushed or hit directly every three years at average wind speeds of 108 miles per hour. This is Category 2 or low-intensity storms on the Saffir-Simpson Hurricane Scale.

**Table 1.** Key Hurricane Information on Dominica

<i>Descriptions</i>	<i>Data</i>
Frequency - Brushed or hit	Every 3 years
Average years between direct hits	10 years
Average wind strength when hit	108 mph
Statistically, next direct hit	2012
Last hit	Erick (40mph) 3 September 2009
Period most frequently hit	24-30 August, annually

Source (Raw data only): Williams, 2010: Hurricane City: <http://www.hurricanecity.com/city/dominica.htm>

Given, Dominica is hit most frequently during the period 24 – 30 August, which is usually one week before the start of the school year, hurricanes inevitably disrupt schools. In addition, the hurricane season lasts well into the first 3 to 4 months of the school year.

Given the psychosocial impacts on children, including disruption and displacement, hurricanes negatively affect student academic performance (Holmes, 2002). Moreover, they undermine student access and their rights of children to education. Because children constitute about 25% of the population of Dominica and are considered among the most vulnerable, it is especially essential to investigate policy responses to education during low-intensity hurricanes in Dominica.

As a useful introduction, it is necessary to trace the origin and evolution of education emergencies. The following section provides a brief historical trajectory of education in emergencies. It identifies the types and forms of education emergencies, the impact of emergencies on education, and the importance of education during emergencies.

### **1.3 ORIGIN AND EVOLUTION OF EDUCATION EMERGENCIES**

The term, “education emergencies” first appeared during UNESCO’s 1996 Mid-Decade meeting in Amman, Jordan. This meeting highlighted the need to deliver basic education during “situations of crisis and transition” (UNESCO, 2000a, p. 7; Kagawa, 2005, p. 488). It recommended the creation of safety zones during conflicts, better understanding of the role of education in conflict management and prevention, and the development of education to meet the needs of traumatized and displaced peoples (Kagawa, 2005).

Education emergencies as a concept had its origin, however, in the need to provide educational services for refugees displaced because of World War II (Kawaga, 2005). Several conventions, as depicted in Table 2, were the impetus for the emergence of the field. The

Universal Declaration of Human Rights, and the 1949 and 1951 Geneva Conventions provided for the rights of children to education with and without war. They also provided for their protection, the protection of their schools and their rights as refugees during and after conflicts (Nicolai & Triplehorn, 2003). Since then several other international and regional conventions and agreements have been adopted further guaranteeing children's rights to education. Table 2 is a menu of these convention and agreements.

**Table 2.** International and Regional Conventions and Agreements on Rights to Education

<b>Year</b>	<b>Conventions &amp; Agreements</b>	<b>Organization</b>
<b>1924</b>	The Geneva Declaration on the Rights of the Child	League of Nations
<b>1950</b>	European Convention on Human Rights	
<b>1948</b>	Universal Declaration of Human Rights (Article 26)	United Nations
<b>1951</b>	Convention relating to Status of Refugees developed as the 1939/1945 wars and its additional protocols (1977)	
<b>1960</b>	UNESCO Convention against discrimination in education	UNESCO
<b>1966</b>	International Covenant on Civil and Political Rights	
<b>1966</b>	International Covenant on Economic, Social and Cultural Education Protocol	UNESCO
<b>1979</b>	Convention on the Elimination of all forms of discrimination against women	United Nations
<b>1981</b>	African Charter on Human and People's Rights	Organization of African Unity
<b>1989</b>	Convention on the Rights of the Child and its Optional protocols (1989 - 2000)	United Nations
<b>1990/2000</b>	Education for All (EFA) by 2015 and gender parity by 2005	UNESCO/World Education Forum
<b>2000</b>	Millennium Development Goals (MDGs)	United Nations
<b>2007</b>	Convention of Rights of Persons with Disabilities and Optional Protocol	United Nations
<b>2011</b>	Charter of Civil Society for the Caribbean Community	CARICOM

During the 1990s, in the aftermath of the break-up of the Soviet Union and the dismantling of Yugoslavia, education emergencies gained prominence. The break-ups of Balkan States triggered waves of ethnic cleansing and related atrocities, displacing large populations



internally<sup>6</sup> (IDPs) and as refugees<sup>7</sup> including children. The Rwanda genocide and conflicts in Sierra Leone, Liberia, Somalia, Mozambique, Colombia, and El Salvador further displaced large populations including children whose educational needs were only partially met within host countries<sup>8</sup> (Gezelius, 1998; Jeria, 1998; Smawfield, 1998; Sommers, 2003; Zeesman, Pearlman & Quick, 2008). Educational services should be provided for IDPs and refugees in keeping with Universal Declarations and Conventions on children's right to education; the 1948 United Nation Universal Declaration of Human Right, the 1949 and 1951 Geneva conventions, and the 1989 Convention on the Rights of the Child and other international instruments (Sinclair, 2002; Nicolai & Triplehorn, 2003).

Historically, education emergencies being rights-based have been closely associated with the provision of educational services, during and after conflicts, primarily but not exclusively in refugee and IDP situations. Emergencies interrupt the provision of and enjoyment of rights to an education (INEE, 2004; Sinclair, 2002). Therefore, the provision of educational services during emergencies should satisfy the rights of children to an education even in adverse conditions.

During the World Education Forum held in 1990, in Jomtien, Thailand, UNESCO and many other agencies and nations reaffirmed the rights of children to a basic education and adopted the goal of Education for All (EFA) by 2015 (UNESCO, 2000b). The United Nations adopted a similar goal as part of its Millennium Development Goals (MDGs), thereby heightening urgency for action while reaffirming educational access for all within the global development agenda.

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<sup>6</sup> Internally displaced people (IDPs) include children who have been displaced from their homes and communities as a result of war, conflicts and natural calamities but who remain within their national borders.

<sup>7</sup> Refugees include children and parents who have been displaced from their countries across international boundaries into host countries.

<sup>8</sup> Host countries are nations that receive refugees.

The formation of the RAPID ED working group, which hosted a series of meeting on emergency response, and the Declaration on Principles of Education in Emergencies and Difficult Circumstances proposed at the Oslo/Hadeland Conference were initiatives that contributed to the rise of education emergencies as an area of international focus (Nicolai & Triplehorn, 2003).

USAID established the Global Information Networks in Education (GINIE) at the University of Pittsburgh's School of Education. GINIE was a virtual learning community for education innovation for countries in crisis and transition (Pigozzi, 1999; Nicolai & Triplehorn, 2003). GINIE provided website support from 1992 to 2002 for educational interventions during and after conflicts, complex emergencies and natural disasters.

In 2000, the World Education Forum meeting in Dakar, Senegal expanded the scope of education in emergencies to include “natural disasters” (UNESCO, 2000b; Sinclair, 2002; INEE, 2004). Natural calamities, which are the same as natural disasters, were now seen as “a major barrier towards attaining Education for All.” Among its twelve strategies, the Forum agreed to “meet the needs of education systems affected by conflicts, *natural calamities*<sup>9</sup> and instability and conduct educational programs in ways that promote mutual understanding, peace and tolerance, and that help to prevent violence and conflict” (UNESCO, 2000b, p. 19).

By 2000, at the Inter-Agency Consultation on Education in Situations of Emergency and Crises meeting convened in Geneva by the International Bureau of Education (IBE) and including several international agencies and non-governmental organization (NDOs), the Inter-Agency Network for Education Emergencies (INEE) was established.

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<sup>9</sup> Italics are my inclusion and are used to highlight the inclusion of natural calamities, the same as natural disasters as part of the new scope of education emergencies.

In 2004, after wide-ranging national, regional and international consultations involving teachers, students, parents, government official and affected communities in over 50 countries, INEE produced the Minimum Standards for Education in Emergencies, Chronic Crises and Early Reconstruction. These are benchmarks for practitioners working in education emergencies covering education access and learning environments, teaching and learning, teachers and other education personnel, and education policy and coordination (INEE, 2004). These benchmarks institutionalized education emergencies at the level of international field practitioners and international agencies involved (Bromley & Andina, 2009). However, the quest for worldwide applicability and implementation of these standards INEE ignored education-related issues that are specific to certain countries or regions, such as HIV/AIDS in Africa (Bromley & Andina, 2009). Further, they ignored the complex nature of education emergencies, and the diverse cultural and contextual situations in which they occur. They also reinforced the often-heard observation that international agencies tend to ignore national governments during their assistance to countries experiencing emergencies, particularly in the case of conflicts (Sommers, 2009).

From 2004 onward, several efforts were made to begin to consolidate the work of education emergencies. Kagawa's (2005) literature review represented the first attempt to take an academic approach to the field, trace its evolution, and establish frameworks for research and study. This review, however, did not include any distinct theoretical frameworks. At the same time, beginning with the work of Sinclair (2002), UNESCO's International Institute for Educational Planning (IIEP) spearheaded a body of research work on education emergencies. These works were mainly case studies, either single cases or multiple cases; however, most were non-comparative. They focused on fragile states, and conflict and post-conflict situations. Most

of these states were located in Asia, Middle East and Africa and two in Latin America - Colombia and El Salvador. These studies focused on student certification (Kirk, 2009); donor engagement (Brannalley, Ndaruhuste & Rigaud, 2009) as well as on the opportunities conflicts provided for education reform and innovation (Nicolai, 2009). It also included an assessment of the pre-packaged, standardized programs that have become the staple for education emergency response, globally, irrespective of context (Penson & Tomilson, 2009). These pre-packaged standardized programs include child-friendly spaces, school feeding programs and Teacher Emergency Packages (TEP).

In addition, from 2004 onward, a number of major natural disasters also diverted attention away from conflict-driven education emergencies. These included devastating earthquakes in Pakistan (2005) (centered in Pakistan-administered Kashmir); Sichuan, China (2008) and Haiti (2010); catastrophic hurricanes in Grenada (2004) and Myanmar (2008) and the Asian Tsunami (2004). Notwithstanding, conflicts continued to dominate discourse on education emergencies. The 2011 EFA Global Monitoring Report, identified conflict as the single most important factor undermining the attainment of Education for all by 2015 (UNESCO, 2011). What changed was the approach to managing emergencies resulting in the development of the “cluster approach” (IASC, 2010).

The United Nation Inter-Agency Standing Committee<sup>10</sup> instituted the cluster or sectoral approach in 2005. The cluster approach is a sector-based, inter-organizational approach to

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<sup>10</sup> The Inter-Agency Standing Committee (IASC) is a unique inter-agency forum for coordination, policy development and decision-making involving the key UN and non-UN humanitarian partners. The IASC was established in June 1992 in response to United Nations General Assembly Resolution 46/182 on the strengthening of humanitarian assistance. General Assembly Resolution 48/57 affirmed its role as the primary mechanism for the inter-agency coordination of humanitarian assistance.

humanitarian responses. It was found that gaps in sectoral lead agencies resulted in unpredictable humanitarian responses, and the cluster approach was instituted with the hope that lead agencies would coordinate the work all other member agencies to improve humanitarian responses during emergencies (IASC, 2010).

Sectoral organizations form clusters headed by lead agencies. Initially, there were nine such clusters. These were logistics; emergency telecommunications; camp coordination and management; emergency shelter; health; nutrition; water, sanitation and hygiene; early recovery and protection. However, these initial nine clusters did not include sectors where leadership and accountability were already clear. These were Agriculture led by the Food and Agricultural Organization (FAO Food led by World Food Program (WFP); refugees led by UNHCR, and education led by UNICEF, the child emergency arm of the United Nation System. UNESCO is the education arm. Because education had already organized itself into a working cluster, it was not included<sup>11</sup> in the cluster organization of the United Nations. By 2006, however, IASC established education as a global cluster with UNICEF and Save the Children UK designated lead agencies (IASC, 2010). IASC provided guidelines and Terms of Reference (TORs) for the operations of these clusters.

As of June 2010, about 38 countries were implementing the cluster approach to emergencies. By then, UNICEF headed 22 of these 38 clusters. Natural disasters triggered eleven of these 38 emergencies (IASC, 2010).

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<sup>11</sup>Fieldwork I conducted in Haiti 7-12 March 2010, following the 12 January 2010 devastating earthquake there revealed the education cluster was located and meeting in Delmas at UNESCO's head office outside MINUSTAH, the UN Compound in Haiti, where all other clusters met. However, UNICEF and Save the Children were the lead agencies.

## **1.4 STATEMENT OF THE PROBLEM AND RESEARCH PROPOSITIONS**

By the time, today's Grade K students graduate out of high schools in Dominica, they would have experienced at least five major hurricanes and many low-intensity ones. Each year between August and November, these low intensity hurricanes destroy school buildings and materials, disrupt schooling and instruction and threaten the safety of children and teachers. Given these chronic low-intensity hurricanes (LIH), how then does the government of Dominica address three major national education policies: donor coordination, resource allocation and service delivery? Because of the persistent physical and fiscal threat hurricanes pose, describing how the government currently responds in these areas can inform senior leadership. It can also inform the donor community, countries and regions experiencing similar risks and vulnerability.

Although governments are responsible for protecting their citizens from disasters, (Comfort, 2003; Luchi & Esnard, 2008; Osei, 2007; Sinclair, 2002), the national government of Dominica does not appear to have an articulated response strategy for education during low-intensity emergencies. In order to begin to design one, it is essential to know how the government responds currently. This will require analysis of inter-agency role and responsibilities, interaction, decision-making and resource flows across the Ministries of Finance, Public Works and Education, the three key agencies involved in response in Dominica. The goal of this study is to prepare a descriptive and analytical account of how the Government of Dominica addresses education during low-intensity hurricanes (LIH).

Based on the espoused definition of education emergencies as the inability education systems of countries to cope with conflicts or disasters using their resources alone (Nicolai & Triplehorn, 2003), the notion that chronic low intensity hurricanes do not attract media attention

and humanitarian assistance; their preponderance and cumulative impacts on Dominica, I developed four propositions to guide this inquiry.

## **1.5 RESEARCH PROPOSITIONS**

1. Because low-intensity hurricanes are recurrent, Dominica has in place explicit policies and structures that anticipate and guide action for chronic low-intensity, education emergencies.
2. The Government of the Commonwealth of Dominica has adequate financial resources to address chronic low-intensity, education emergencies.
3. The education sector in Dominica receives top funding priority during chronic low-intensity, emergencies.
4. Services delivery for chronic low-intensity, education emergencies in Dominica are timely and efficient.

These propositions are based on several assumptions. It assumes the threat of hurricanes to education in Dominica is well known; their recurrence and possible impacts even at low intensities are understood and considered during planning, and that education is treated as a priority during LIH, given children's vulnerability to them. It assumes policies and frameworks for donor coordination and financial allocations and service delivery (preparation, response and recovery) exist and are well-implemented because of prior planning activities and Dominica's recurrent exposure to hurricanes.

The chapter which follows explores the concepts associated with education emergencies, the theoretical frameworks that have been developed in response to them, and the gaps in the literature involving emergencies triggered by hurricanes. It proposes frameworks for understanding recurrent, chronic disasters and for investigating education during low-intensity, hurricanes in Dominica.



## **2.0**

## **CONCEPTUALIZING EDUCATION EMERGENCIES**

Education emergencies are adverse situations that usually affect education negatively and lead to its disruption and/or collapse. These are “situations where children lack access to their national and community education systems due to the occurrence of complex emergencies or natural disasters” (Nicolai & Triplehorn, 2003, p. 3). These emergencies “overwhelm the capacities of society to cope by using its resources alone” (Nicolai & Triplehorn, 2003, p. 11).

Resource constraints, therefore, partly define emergencies, and international and national responses to them. Countries affected by education emergencies have tended to rely on external resources to cope, respond and engage in reconstruction activities. The literature indicates that external resources received for educational purposes tend to be temporary, short-term quick fixes that do not address the longer-term needs of education systems during emergencies (Penson & Tomilson, 2009; Pigozzi, 1999; Vargas-Barón & McClure, 1998;). These temporary, short-term quick fixes are incongruent with the varied and complex nature of education emergencies. Comfort (2004) in analyzing response coordination and organizational performance during 9/11 in the United States downplayed the importance of resource availability. The demand for assistance relative to the capacity to respond to that demand appeared to be more important in that particular emergency response, and its response coordination and performance (Comfort,

2004). It appears, the ability to move the resource in the direction in which it is required, and the amount in which it is needed are important in emergency response and in particular in this case.

Capacity appears to be a resource issue during other emergencies as well. Because of limited local resources to cope and dependence on external assistance, education emergencies have tended to be driven in large part by international humanitarian organizations like Save the Children, PLAN, Child Fund and Catholic Relief Services (Nicolai & Triplehorn, 2003; Save the Children, 2007). These are funded by bilateral and multilateral agencies such as USAID and UNICEF that possess some of the required resources to tackle immediate educational and developmental needs of children from infancy to basic education across the various types of emergencies.

## **2.1 TYPES OF EMERGENCIES - LOUD, SILENT, COMPLEX**

According to Kagawa, education emergencies are “loud,” “silent” or “complex” (Kagawa, 2005). “Loud emergencies” are “natural” disasters, war or conflicts that destroy educational infrastructure and disrupt the provision of schooling (Kagawa, 2005). The Sichuan Earthquake of 2008 that killed over 10,000 school children as their schools collapsed and the 2010 Haitian earthquake which destroyed 50% of schools there are classic examples of loud emergencies. The occurrence and effects of these emergencies are very visible and they are often sudden and catastrophic unlike “silent” emergencies that are pervasive, prolonged and often less visible.

Silent emergencies are those situations that have indirect but negative impacts on education, such as poverty, HIV/AIDS and street children (Pigozzi, 1999). They often exist prior

to the occurrence of loud emergencies, which often exacerbate them. They affect access to education, perpetuate gender and ethnic differences, and undermine the capacity of governments to finance education adequately (Kagawa, 2005).

When loud and silent emergencies combine, or reinforce each other, then complex education emergencies occur. This is often the case in developing countries. Haiti's poverty, weak governance and large number of out-of-school children were silent emergencies by the time of the earthquake on 12 January 2010. The earthquake only made worse an already bad situation, destroying 50% of school buildings (UNICEF, 2010). Most of these were located in the Port-au-Prince, Jacmel, and Leogane regions, the areas hardest hit and with the highest concentration of school buildings. Various studies indicate the education systems of countries with education emergencies are already in crisis or suffer silent emergencies by the time they are struck by loud emergencies (see Nicolai, 2009; Retamal & Richmond, 1998). Education emergencies, in particular complex emergencies have varied complex impacts.

## **2.2 IMPACT OF EMERGENCIES ON EDUCATION**

As noted, disasters and emergencies destroy school buildings and disrupt educational access and participation for large numbers of children (ADPC, 2008; Holmes, 2002; INEE, 2004;). They destroy learning materials and school records (Serrant, 2011), are traumatic for children (Fietelberg, 2007; Joseph, 2006), affect their academic performance (Pane McCaffery, Karla, Zhou, 2008), and kill teachers and teaching staff (Machel, 1996; Sommers, 1996).

### **2.2.1 Disruption of access and participation**

Nine years after the Rwandan genocide and civil war, 25% of all primary school age children were still out of school (Sommers, 2009). Six months after Hurricane George devastated Central America in 1998, many students were still out of school (Serrant, 1999). About 1140 (380 schools) and 682 (227 schools) respectively, were damaged and destroyed. Over 400,000 students or 50% of the primary school enrolment were affected (USAID, 1998). Sommers (2009) estimated that in 2003, between 43 and 48 million of the world's refugee and IDP children and youth were not in school. It was estimated that in 2008, more than 67 million children worldwide were still out of school (UNESCO, 2011).

Disasters also destroy learning materials and schools' and students' records. When I visited Haiti, 7-12 March 2010, I observed, school and students records littered across the rubble of school buildings destroyed because of the earthquake of 12 January 2010 (Serrant, 2011). This means schools' and students' records were forever lost unless these were stored in some remote locations.

### **2.2.2 Psychosocial impact**

Disasters and emergencies are traumatic for children (Joseph, 2006; Feitelberg, 2007). Three years after Hurricane Ivan hit the Cayman Islands in 2004, 34 percent of 129 children (11 - 16 year olds) surveyed suffered from full Post Traumatic Stress Disorder (PTSD), 22% suffered partial PTSD, and 54% were depressed (Fietelberg, 2007). Trauma stemmed from the event

itself, its direct impact on their lives, the social and academic disruption, and the dislocation they experienced as a result of damages to their schools.

A study of the impacts of Hurricane Mitch on the mental health of Hondurans found 22.1% of the population were identified as psychiatric cases, 18.3% had major depression and 11.1% post-traumatic stress disorder. This study also showed that factors such as the level of exposure, socioeconomic status, and previous mental disorders are significantly associated with the level of psychological distress (Caldas de Almeida, 2002). Trauma also affects students' academic performance.

### **2.2.3 Impact on academic performance**

Studies on the impacts of disasters on student academic performance showed mixed results (Pane, McCaffrey, Karla, & Zhou, 2008). A study on the impact of the 2004 hurricanes season on the FCAT scores of Grades 4 - 10 in Florida revealed statistical but no practical difference in student performance between high and low impact hurricane-affected schools (Baggerly & Ferretti, 2008). This study did suggest however, that student support and counseling in the wake of the hurricanes and the safe place schools provided could have contributed to the results of the study. It also suggested that low-performing students may have been displaced to other states. It may also be that a before-after method of investigation would have been better for studying the impacts of hurricanes on academic performance.

Another study attempted to measure the adverse effect of 1999-2000 hurricane season on student performance on end-of-year tests and the attainment of school accountability standards in North Carolina (Holmes, 2002). The results showed that 20 more schools would have met those

standards had the 1999-2000 hurricanes not occurred in North Carolina. The study however, did not isolate the other factors, like household adjustment factors that may have impacted on students performance.

#### **2.2.4 Death of teachers and staff**

In some situations, school staffing becomes inadequate because of death and injuries to teachers as a result of these disasters and emergencies (Sommers, 1996). During the Sichuan Earthquake in 2008, Yingxiu Elementary School, located near the epicenter of the quake lost most of its 70 teachers, and 473 students. Institutional memories and years of teaching experiences are lost because of these deaths (INEE, 2004).

Given these impacts, re-establishing education services, from initial education and preschool to tertiary education, during disasters and emergencies is critically important. The following section outlines the importance of providing education during emergencies and it establishes the rationale for why it should be a top priority.

### **2.3 IMPORTANCE OF EDUCATION IN SITUATIONS OF EMERGENCY**

Education is essential during emergencies. It affords child protection by offering safe spaces, serves a psychological function for dealing with trauma, and helps to structure student lives as well as ensuring children remain in school and complete their school years, if at all possible. It is a medium for conveying survival messages, ensuring child development, and reaffirms

educational access and participation as a universal right. These conventions require states to honor this right during conflicts and natural calamities like earthquakes and hurricanes (Pigozzi, 1999; Sinclair, 2002; Kagawa, 2005).

Educational services often play an essential role in child protection. School can reduce children's exposures to risks, such as rape or recruitment as child soldiers (Pigozzi, 1999; Smith & Vaux, 2003; Kagawa, 2005; Aguilar and Retamal, 2009; Gates & Reich, 2010). Schools can be safe places for children. However, they are sometimes subject to violent attacks during wars and conflicts as was the case in Chechen, Russia, and recently the Gaza Strip (Peterson, 2001; Ahmad & Vulliamy, 2009). Grenades and rockets were thrown into schools, because it was thought they were shelters for military targets (Peterson, 2001).

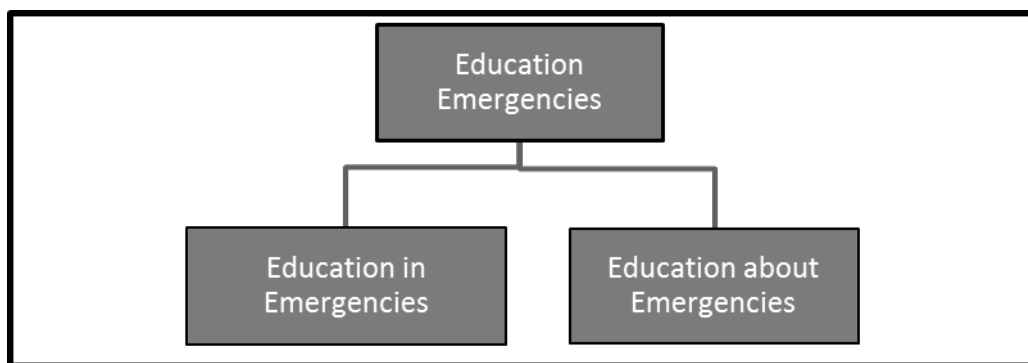
Education in situations of emergencies usually serves an important psychosocial function. Schools provide a sense of normalcy for children during emergencies and are places for expression, play and engagement with their peers (Aguilar & Retamal, 2009; UNESCO, n.d.; UNICEF, 2004). Schools can give shape and structure to students' lives, instill community values, and promote peace and interdependence. The presence of schools in situations of emergency signals a degree of stability, and a return to normal roles and relationships within families and communities (Aguilar & Retamal, 2009). "Restoration of access to education is crucial for the psychological development of war-affected children and adolescents and those affected by natural disasters" (UNESCO, n.d).

During and after emergencies, education provides channels for conveying survival messages and developing skills for conflict resolution and peace building (Petal, 2008; Sinclair, 2002). Peace education is often incorporated into school curriculum and teaching guides. Once

conflicts are over, peace education is increasingly used during the reconstruction process (Aguilar & Retamal, 2009; WAEC, 1998.).

### **2.3.1 Forms of education emergencies**

A systematic review of the literature revealed two major forms of writings about education emergencies – education-in-emergencies and education-about-emergencies. At present, they remain two separate approaches, the former advocated by emergency practitioners working in the field and the latter mostly by educators. Figure 2 shows these two branches.



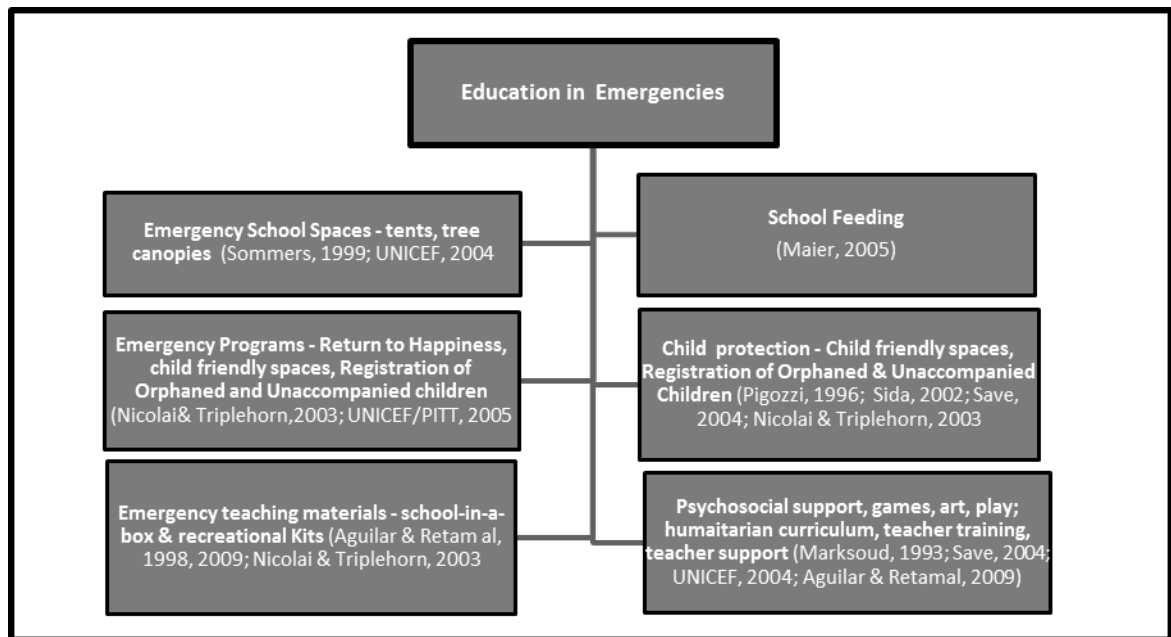
**Figure 2.** Classification of Forms of Education Emergencies

#### **2.3.1.1 Education in emergencies**

Education-in-emergencies provides educational access and services to children during emergencies – teaching/learning spaces, programs and materials. It includes the provision of “formal and non-formal education to children and youth whose access to education systems has been destroyed or interrupted by war and other calamities” (Sommers, 2003, p.1). As shown in



Figure 3, education in emergencies comprises emergency programs, teaching and learning materials, provision of school spaces, as well as psychosocial support for teachers and students, child protection, and school feeding and health services. It can include the rehabilitation and eventual re-introduction of child soldiers into schools (Kagawa, 2005).



**Figure 3.** Classification of the Main Features of Education in Emergencies

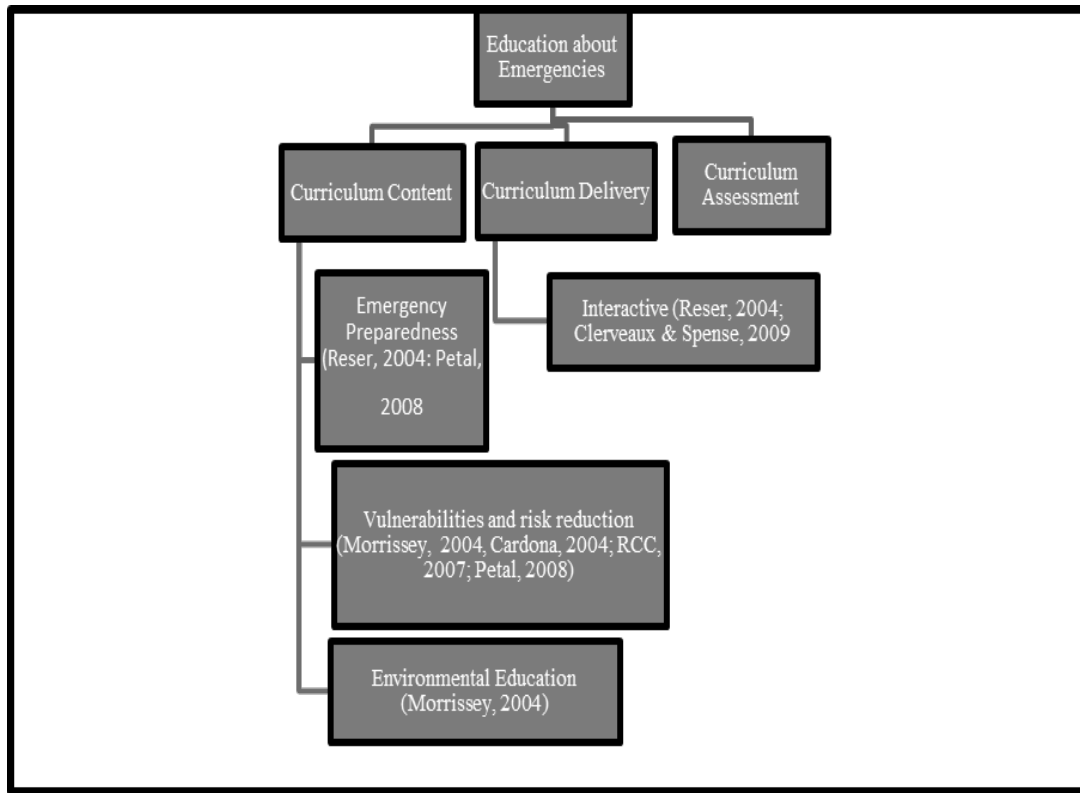
Education in emergencies, however, constitutes temporary stopgap measures; short-term assistance is provided until humanitarian agents in education move on to other emergencies, or when the bright lights of the media fade (Pigozzi, 1999; Vargas-Barón & McClure, 1998;). Much of this assistance, like learning materials like logical blocks is imported and expensive, making their use unsustainable and possibly not culturally or linguistically appropriate to the children and their families (Penson & Tomilson, 2009). Because they are often externally produced they may not reflect local contexts and realities (Sommers, 2003). They are inputs

from international agencies, since affected countries usually lack the resources and the systems to produce their own rapidly (Sommers, 2003). These resources are what international humanitarian agencies deem countries will need in order to cope with disasters. They are, however, directed at response and early recovery and not at re-construction, or mitigation/prevention.

Education about emergencies adopts a longer term, more preventive approach to emergencies using knowledge and information transmitted through the curriculum.

#### **2.3.1.2 Education-about-emergencies**

Education-about-emergencies involves the inclusion of information about disasters and emergencies in existing school curricula. It focuses on curriculum content, delivery and assessment. It involves teaching students about disasters and emergencies, equipping them and their families with information, skills and attitudes to prevent and/or prepare for them (Petal, 2008). By providing information about disasters and the environment, schools prepare generations of children to prevent and reduce natural disasters (Cardona, 2004; Clerveaux & Spence, 2009; Morrissey, 2004; Murdock, 2004; Petal, 2008; RCC, 2007; Reser, 2004). Figure 4 presents a hierarchical diagram of aspects of education about emergencies.



**Figure 4.** Classification of the Features of Education about Emergencies

In addition to being places for restoring access, reducing childhood traumas, and providing disaster and environmental education, education-about-emergencies treats schools as places to teach peace and build social relations that reduce ethnic and other tensions that lead to war (Aguilar & Retamal, 2009; Pigozzi, 1999; Retamal & Adeo-Richmond, 1998; Vargas-Barón & McClure, 1998; WAEC, 1998). Aguilar and Retamal (2009) proposed a humanitarian curriculum that includes literacy, numeracy as well as recreation, play and games but as part of temporary stopgaps until countries can reconstruct their education system.

Whether as separate disciplines, or infused into existing curriculums, education-about-emergencies uses interactive curriculum delivery methods. These include the use of games,

sports, plays and art incorporated into teaching about emergencies, disasters and the environment.

Clerveaux and Spence (2009) used interactive Disaster Awareness Games (DAG) to teach Caribbean students about disasters, using a pre- post-test design to measure students' performance on disaster information. It was shown that student recall improved after playing the games. The argument is that students armed with information about disasters would better assist their families and schools in preparing for, and preventing disasters and emergencies (RCC, 2007, Petal, 2008). The assessment method neglected to consider the real life interactions and collaborations that occur during emergencies or when the game is played.

Children can become “disaster reduction catalysts” and key actors in the development of a “culture of safety” (Petal, 2008). Education-about-emergencies, then, shifts approaches to disasters and emergency from response to prevention, from being reactive to being proactive, from a post-disaster to a pre-disaster focus. It is, however, mostly information-based and premised on the argument that armed with information, children and their families will be able to anticipate, prepare for and manage the adverse impacts of disasters.

Comfort (1997) has argued for the pivotal place of information in decision-making about disasters and disaster response, particularly regarding the flexible disbursements of resources in response to hazardous disasters. Huggins' (2007) study on hurricanes in the Eastern Caribbean highlighted the importance of information, in his case geo-informatics, in decision making regarding disasters, and in linking response to mitigation in an informational feedback loop using information technology. Neither, however, has linked information acquisition or dissemination to education or the education system, particularly at the primary and secondary level. Education

is taken as the process of instruction and learning, while education system constitutes the infrastructure, material, personnel and organizations that facilitates the process.

Comfort (2004) highlighted the importance of coordination (organizational and institutional) in effective disaster response, stating that the prior existence of these coordinating attributes improved responses during disasters (Comfort, 1999). However, incorporating this essential social relation attribute into emergency management behavior across generations does not appear to be explicit in her work.

Alexander (2003, 2008), on the other hand, highlighted the importance of education and training in emergencies but at the level of higher education and targeted at disaster managers, to improve their competence in disaster management.

Because of these two major forms of education emergencies, two distinct response approaches have emerged: the humanitarian-response and developmental approaches.

## **2.4 APPROACHES TO EDUCATION EMERGENCIES**

The two major approaches to education emergencies exist - the humanitarian-response approaches and the developmental approaches. While they are discussed below as if they were distinct and separate – humanitarian-response approaches are necessary precursors to development approaches - the former is short-term, quick, interim and relief-oriented. The latter is long-term and transformative.

### **2.4.1 Humanitarian-response approaches**

Early writers on education emergencies, such as Aguilar and Retamal (1998) and Aedo-Richmond and Retamal, (1998), and later Aguilar and Retamal (2009) grounded their work in a human rights-based, humanitarian approach to education emergencies. Initially, they embraced emergency thinking that assumed education, unlike search and rescue, food, water and health did not rise to a level of urgency. It did not require urgent attention since not having it was not a matter of life and death. It could wait. A groundbreaking report, Machel Report, on the impact of armed conflict on children may have helped to change all that although others may have been working on this issue simultaneously.

Machel (1996) found that wars and conflicts had debilitating effects on children, their families, livelihoods, and education; conflicts displaced children and their families either as refugees or internally within their country borders. Many of these children die or become malnourished, developmentally delayed and suffer from post-traumatic stress disorders (Machel, 1996). The 2011 UNESCO EFA Global Monitoring Report found that schools were important places for dealing with childhood traumas, and their operations symbolized therefore a return to normalcy for children and their communities. They were places for protecting childhoods, and rehabilitating child soldiers. They were also places where children, who lost their social support systems, and especially their families, could find support (Machel, 1996). Schools were essential in educating students away from the fractured ideologies and negative identities that contribute to causing often cyclical or chronic conflicts and wars (Vargas-Barón & McClure, 1998).

Education, therefore, was a mechanism for building peace, overcoming violence and improving respect for human rights (Salmi, 2000; Sommers, 2009; Vargas-Barón & Bernal,

2005). Given the importance of education, refugee communities tended to establish their own schools rapidly. Rwandan refugees in Tanzania who escaped the 1994 Hutu -Tutsi genocide established their own schools without outside resources, indicating the importance of education and culture to parents during emergencies (Sommers, 1999).

In part because of the Machel Report (1996), the United Nations eventually declared education the fourth pillar of humanitarian assistance joining food, shelter, health care at the UN Special Session on Children in 2002 (Aguilar & Retamal, 2009; United Nations, 2002).

As the fourth pillar, education initially became a compendium of emergency learning spaces like “tents” including emergency education programs such as “Rapid Ed”<sup>12</sup> and “Return to Happiness;”<sup>13</sup> and Emergency teaching and learning materials like “PEER”<sup>14</sup> and “Teacher Educational Package or School-in-a-Box”<sup>15</sup> (Miller & Afolter, 2002; Sommers, 1999; Toole & Aguilar, 2006; UNICEF, 2003; UNICEF, 2005; UNICEF & University of Pittsburgh, 2005;). PEER also established “education development centers” to assist with longer-term educational development, especially in countries such as Somalia that lacked educational infrastructures, centers for curriculum and materials development and teacher training. Several efforts also included the registration of unaccompanied, abandoned and orphaned children.

Under the leadership of Pilar Aguilar, UNICEF conceptualized and established child friendly spaces (CFS)<sup>16</sup> that sought to improve child development, initiate or continue

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<sup>12</sup> Rapid Ed is a three-phase response program developed by UNESCO, UNHCR & UNICEF – recreational, non-formal and formal education, in that order (Nicolai & Triplehorn, 2003)

<sup>13</sup> UNICEF program of games and health activities designed bring back fun to the lives of children affected by disasters and emergencies (UNICEF, 2010b)

<sup>14</sup> Developed by UNESCO, Program for Education for Emergency and Reconstruction (PEER), developed School in the Box which was first rolled-out in Somalia in 1993 (Aguilar & Retamal, 1998).

<sup>15</sup> A literal box containing teaching and learning materials for a class of 80 children, which UNICEF compiled for use in CFS (Sommers, 2003).

<sup>16</sup> These are tents located in refugee centers or IDP camps that are cordoned off for teaching and learning activities.

educational activities, provide health and nutritional services and protect children from abuse and crime UNICEF & University of Pittsburgh, 2005; Nicolai & Triplehorn, 2002; Save the Children, 2003; SIDA, 2002; UNICEF, 2003). Since then, school feeding programs have expanded and attention has been given to the rehabilitation of child soldiers, and more recently, a “humanitarian curriculum” has been developed (Aguilar & Retamal, 2009; Kagawa, 2005; Maier, 2005). The humanitarian curriculum integrates temporary school curricula for reading, writing and arithmetic with psychosocial support through recreation, play and games (Aguilar & Retamal, 2009). Aguilar & Retamal (2009) also proposed the use of recreational kits, child peer-group living arrangements for mutual support, and the mobilization of existing social care systems for children. This includes support for foster and extended families, particularly for unaccompanied and orphaned children. As humanitarian responses, they are driven largely by international and intergovernmental humanitarian agencies.

International intergovernmental and humanitarian assistance agencies like UNHCR, UNICEF and certain bilateral agencies including USAID, SIDA, NORAG and others as well as international NGOs such as Save the Children have driven initiatives for education in emergencies. They have provided short-term programs for children, leaving longer-term issues of national education systems and their recovery to the future. However, the transition from humanitarian assistance to sound educational policy planning and program development is rarely effective and timely. This has occurred in part because education has been given a low priority during emergencies. Furthermore, education is often in crisis long before conflicts emerge or natural calamities strike. Once the bright lights of the media are gone agencies move to the next conflict or natural calamity educational needs are overlooked (Vargas-Barón & McClure, 1998). An exception to this situation was found in El Salvador where educational policy planning begun



during its war was accelerated and completed within the “window of opportunity” of from 18 to 24 months after the cessation of hostilities. The Salvadoran educational reform was highly successful in improving educational systems because of this timely reform process (Vargas-Barón & Bernal, 2005).

With the exception of El Salvador, early humanitarian approaches failed to use emergencies as “windows of opportunity” to transform national education systems, particularly in nations where education contributed to emergencies such as armed conflicts (Vargas-Barón & McClure, 1998; Pigozzi, 1999; Vargas-Barón & Bernal, 2005). Interventions were designed to deal rapidly with the emergencies but generally they did not address the long-term and complex needs of education (see Aguilar & Retamal, 2009; Nicolai, 2009). They also failed to address social, economic and gender inequalities that created differentials in educational access and performance, thereby reinforcing social inequities, such as poverty, that contribute to emergencies (Vargas-Barón & McClure, 1996). As medical-relief models, they undertook quick assessments of education emergencies and conducted rapid interventions without a long-term commitment to addressing the problems that made education vulnerable and/or counterproductive in the first place (Vargas-Barón & McClure, 1998). Consequently, they did not deal with the fundamental causes of vulnerabilities and threats, the silent emergencies that existed before the emergency arrived. Such silent emergencies would continue long after humanitarian assistance left and would become continuing catalysts for future loud and complex emergencies. Humanitarian specialists and their agencies attempted to treat temporarily the effects of emergencies, ultimately leaving affected countries highly vulnerable to future natural calamities and other complex crises.

Eventually, other models (phased, child-centered and sectoral models) emerged to revise, correct or replace the anomalies in initial humanitarian-response approaches. These were the Rapid Educational Response (RER), the Acute, Stabilization and Re-construction (ASR), The Immediate Sooner and Later (ISL) Matrix, The Circle of Learning and the Cluster Approach.

#### **2.4.1.1 The Rapid Educational Response Model (RER)**

UNESCO, UNHCR and UNICEF developed the RER as a three-phase model to be used in the immediate aftermath of the large-scale displacement of children and their families after disasters and emergencies (Aguilar & Retamal, 1998; Nicolai & Triplehorn, 2003). The first phase consists of recreational programs. Phase 2 featured non-formal education services, and finally Phase 3 focused on formal education. These phases were based on the 1995 UNHCR revised guidelines for educational assistance to refugees (Aguilar & Retamal, 1998). Nicolai & Triplehorn (2003) challenged this phase notion of RER, stating that all three could be implemented at the same time with the implication that at some point education for refugee and displaced children would not exist.

The implementation of the RER model in West Timor in 1999 among East Timor refugees revealed other issues, including the absence of clear guidelines for protracted program implementation. The “tent schools” set up to implement RER were never integrated into the existing school system and those tents became targets during the conflict. Camps, where they existed, were considered no longer safe and were closed.

The Acute, Stabilization and Reconstruction (ASR) model was then proposed by Marc Sommers in 2003 instead of the RER. It made primary education the second tier priority rather

than the third as in the RER model, thereby improving the priority status of formal education during emergencies.

#### **2.4.1.2 The Acute, Stabilization and Reconstruction Model**

The ASR is a three-phase model as well (Sommers, 2003), including acute, stabilization and reconstruction phases (ASR). Unlike the RER, where formal education constituted its final phase, with the ASR, formal education was included in the second phase. With ASR, formal education enjoyed a higher priority. In addition, ASR also included a reconstruction phase. Neither, however, provided criteria regarding the beginning, length or termination of their phases, resulting in considerable ambiguity. In general, the acute phase involved recreation activities coupled with literacy and numeracy programs. During the stabilization phase, formal education and especially primary education was to be reactivated. For the reconstruction phase, education systems were to be re-established following the cessation of conflict. It was recognized that these phases overlap (Sommers, 2003). The ASR model appeared to be most applicable to conflict, but like its predecessor, it lacked guidelines or specific implementation activities.

An Immediate, Sooner and Later (ISL) Matrix was developed by Sinclair & Triplehorn, in 2003 to guide the implementation of these phased models (Nicolai & Triplehorn, 2003).

#### **2.4.1.3 Immediate, Sooner and Later (ISL) Matrix**

The ISL Matrix is a list of education related-activities to be undertaken immediately, sooner, and later following disasters and emergency responses. The ISL matrix removed ambiguities in the RER and ASR models and focused on what actually needed to be done, that is, core educational

needs in response to disasters or emergencies, irrespective of the situation. In addition to an academic component, the matrix outlined supplies, management, capacity building and a building operations system. This Matrix included activities for child and social protection and psychosocial support with detailed lists of what needs to be done, a feature that had been neglected in the RER. INEE adopted this matrix as part of its compendium of *Minimum Standards for Education in Emergencies, Chronic Crises and Early Reconstruction*, particularly in its Toolkit on Disaster Risk Reduction and Preparedness (INEE, 2010). It was incorporated into the work of the Overseas Development Institute as part of its Humanitarian Practice Network, a forum for improving humanitarian action. Notwithstanding these refinements, the model, like its predecessors, lacked clear guidelines for protracted implementation, and it did not make children and their learning the center of disaster and emergency response in education. It focused instead mainly on child protection and humanitarian needs. In response to this criticism, “the Circle of Learning model” emerged (Nicolai & Triplehorn, 2003).

#### **2.4.1.4 Circle of Learning Model**

Save the Children UK developed *The Circle of Learning* in (date). It placed children’s cognitive and psychosocial well-being at the center of disaster and emergency response. It connected children’s education at the primary level to formal education structures, non-school and out-of-school programs as well as humanitarian assistance and advocacy (see Nicolai & Triplehorn, 2003). It rectified the isolation of “tent schools” as had occurred in West Timor. It placed learning spaces for children at the center of IDP camps, as was the case in Haiti, to highlight the *Circle of Learning* approach (Personal Observation, 8-14 March 2010). It literally surrounded children with support. This concept was first designed and implemented in Kosovo refugee

camps in Albania and Macedonia in 1999 as “Child-Friendly Spaces” (Madfis, Martyris & Triplehorn, 2010). Since then it has become a staple of UNICEF’s emergency education work, and a major aspect of responses to education emergencies worldwide (Penson & Tomilson, 2009).

However, all of the three-phase models, the ISL Matrix and the Circle of Learning, shared several weaknesses. There was a delayed engagement with the existing education system. Instead, these initiatives established new programs that they attempted to incorporate into existing structures. All of these programs featured short-term heroics and responses based on rapid assessments of education needs. They were designed and implemented by international agencies, often with little consultation with the national governments that would be responsible for schooling after the agencies left (Nicolai, 2009).

As a result of concerns regarding maintenance of effort and sustainability, the United Nations adopted a sectoral-collaborative methodology called “the cluster approach” as a way to begin a more long-term engagement with national governments in situations of conflicts or emergencies.

#### **2.4.1.5 Cluster Approach**

As noted earlier, the Cluster Approach was instituted in 2005 by the Inter-Agency Standing Committee. It was developed because of observed lapses and gaps in sectoral leadership, accountability and predictability in emergency response (IASC, 2006). It sought to strengthen partnerships among NGOs, international organizations, International Red Cross and Red Crescent Movements and UN agencies. The clusters brought together teams responsible for coordinating humanitarian responses around nine sectors – logistics; emergency

telecommunications; camp coordination and management; emergency shelter; health; nutrition; water, sanitation and hygiene; early recovery and protection. These clusters operate at the global level as well as the country level where emergencies exist. They are coordinated through lead agencies. Save the Children and UNICEF were designated to be the co-heads of the education cluster (IASC, 2006). This global cluster approach masks the diverse and complex nature of emergencies, emergency triggers and their impacts, and it has weakened the importance given to national and local contexts during emergencies.

A recent evaluation of the cluster systems implemented in Haiti, Myanmar, Democratic Republic of Congo, Occupied Palestinian Territory and Uganda found that the single most important value of the approach was information sharing. Box 1 outlines the key findings of this evaluation. In the case of Haiti, it served as a mediator to resolve conflicts, improve communications and relations (Streets, Grunewald, Binder, de Geoffroy, et al., 2010). Box 1 shows selected findings for the evaluation of the Cluster Approach (see Streets, Grunewald, Binder, De Geoffroy, et al. 2010, p. 8-10)

**Box 1:** Selected findings from the Evaluation of the Cluster Approach

1. *Partnership* between UN agencies and other international humanitarian actors has become stronger, especially as NGOs increasingly assume co-lead or co-facilitator roles.
2. *Coverage* of humanitarian needs has improved in some thematic areas. Depending on the country context, this includes gender-based violence, child protection, disability, water and sanitation, and nutrition.
3. *Gaps* in humanitarian assistance are better identified and *duplications* are reduced. As a result, humanitarian actors can better target their assistances and resources are used more efficiently
4. Inter-cluster coordination is ineffective in most cases and there is little integration of crosscutting issues.
5. Poor cluster *management and facilitation* in many cases prevents clusters from reaching their full potential. Thus, clusters are often process - rather than action oriented.
6. In their current implementation, clusters largely exclude national and local actors and often fail to link with, build on, or support existing coordination and response mechanisms.

The impacts of the cluster approach appear to be mixed but it signaled the first real attempt to work directly with governments and other organizations with long-standing involvement in education in affected countries. It signaled also the shift to development

approaches that made national governments and school communities centers of education response and reconstruction and took a long-term, transformative approach (see Pigozzi, 1998).

It found there was a general tendency for clusters working in education emergencies to bypass national government and work directly with communities and international or national NGOs or both, particularly where it is believed government action or inaction may have contributed to the emergencies (Sommers, 2003).

In a study of donor agencies' support for education in fragile and conflict-affected states, results showed that in Liberia, donor agencies bypassed the state and provided monetary or non-monetary support directly to implementing agencies and NGOs (Brannelly, Ndaruhutse & Rigaud, 2009). Further, of the five agency programs highlighted in this study, only three included an education component (Brannelly, Ndaruhutse & Rigaud, 2009).

The developmental approaches remain the expressed objective and desire of major actors in education emergencies such as UNICEF, UNESCO, UNHCR and Save the Children (see Aguilar & Retamal, 1998). However, the expressed long-term commitment of many international agencies to the use of developmental approaches to education during emergencies has also been questioned given the preponderant use of standardized programs that are implemented rapidly, notably through child friendly spaces, school feeding programs and the use of educational kits (Nicolai, 2009).

Aguilar and Retamal (2009) believed the psychosocial and protection dimensions of developmental approaches were being neglected in favor of literacy, numeracy and life skills, highlighting the continued dichotomy between the humanitarian-response and developmental approaches. Development approaches, then, focus on the long-term engagement and transformation of education particularly where education may have contributed to conflicts or



where it ignored risks and vulnerabilities associated with disasters and emergencies. Understanding and working within local realities is essential to developmental approaches.

#### **2.4.2 Developmental approaches**

Developmental approaches to education response, recovery and reconstruction were proposed in the mid-nineties (Aguilar & Retamal, 1998; Pigozzi, 1999; Vargas-Barón & McClure, 1998;). These approaches advocated for the transformation of education policy and programs, particularly in complex emergencies involving conflicts and genocide (Sommers, 2003). They also involved reforming and reconstructing education rather than reconstituting previous educational systems. They proposed the use of disasters and emergencies as “windows of opportunity” (Vargas-Barón & McClure, 1998) for “transforming education along the lines envisioned by the Jomtien World Conference on Education for all” (Pigozzi, 1999, p. 4).

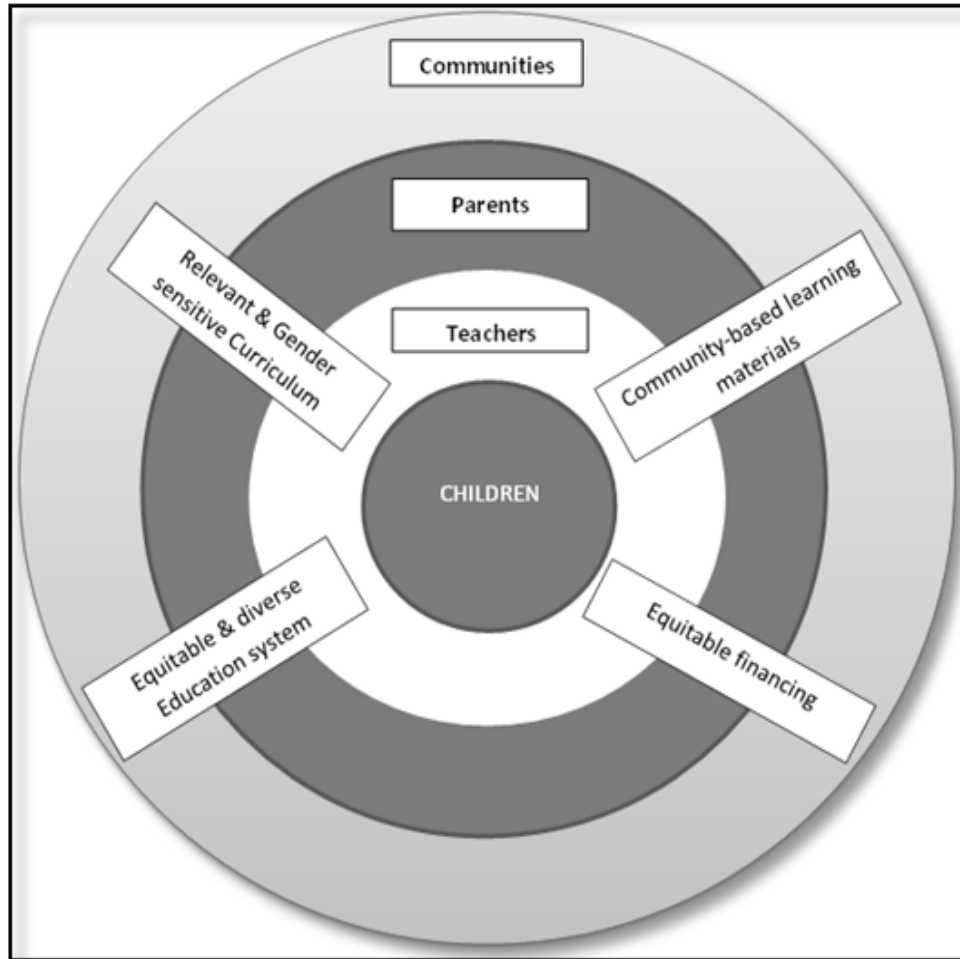
In the ideal situation, the developmental approach would feature child-centered education. Teachers would be respected and supported to provide learning environments that foster relevant, quality education. The education system and the curriculum would be gender sensitive and attentive to equity and diversity issues. Financial resources would be distributed more equitably. Parents and communities would be respected as partners in the education process. Community resources would be incorporated into teaching and learning materials (Pigozzi, 1999). All of the foregoing requires time and contextual knowledge. Ideal situations, of course, rarely occur.

In a compendium of case studies, involving ten countries,<sup>17</sup> Nicolai found that educational transformation during and after conflicts was a difficult and protracted exercise (Nicolai, 2009). Transformation required partnership among all actors including national governments, donors, NGOs, communities, and community-based organizations. Government policies and support remained critical windows of opportunity for transformation (Nicolai, 2009).

This transformation treats education as context-situated. It not only supports healthy children's growth and development; it also emphasizes the development of their cognitive and social skills. It helps to promote good governance and democratic ideals as well as the application and adherence to the rule of law - local, national and international. It constitutes healing, restoration and prevention. Finally, it includes communication, information and involves the media (Pigozzi, 1999). Clearly, this presents education as it should be and is admittedly utopian. Its key element is that children, and not just their learning, are central to any response in education emergencies; intervention should be long-term and should consider local contexts, anticipatory rather than reactionary, adaptive rather than transformative. Figure 5 presents the key features of Pigozzi's developmental approach.

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<sup>17</sup> These ten countries were Afghanistan, Angola, Cambodia, Colombia, Kosovo, South Africa, Southern Sudan, Sri Lanka, Rwanda & Uganda ( Nicolai, 2009a)



**Figure 5.** Developmental Approach to Education Emergencies (based on Pigozzi, 1996, description only)

This approach exhibits several shortcomings. It is still a post-emergency approach, which in reality is proving difficult to implement since education is not addressed at the onset of the emergencies. This delay creates opportunities for the reestablishment of the old education system without needed improvements. I found on visiting Haiti that schools were already in operation while the Education Cluster was still in response mode following the 12 January 2010 earthquake (Serrant, 2010, Personal Observation, Haiti, 7-14 March 2010). It may not deliver the kind of educational transformation that policy makers might envision. The approach makes

children not schools the center of attention, thereby downplaying the transformation of existing spaces central to the lives of children. In this formulation, the developmental approach is reactionary rather than anticipatory. It is too focused on conflict-induced education emergencies or those triggered by catastrophic natural disasters, neglecting chronic, low-intensity triggers like low-intensity hurricanes.

Developmental approaches assume that leadership will be forthcoming on the part of humanitarian and international organizations. Unfortunately, these organizations are not designed to provide long-term support or intervention during emergencies. As a result, they lack the policy, institutional and financial frameworks and personnel with experience that are essential for working with local lead agencies such as Ministries of Education, teacher training colleges and institutes. They operate mainly as channels for providing external assistance to meet immediate educational needs, opting instead for bilateral and multilateral agency contractors that are usually international NGOs or development firms as lead agencies for developmental approaches that work to transform education during and sometimes for a while after emergencies (Sommers, 2003).

### **2.4.3 Developmental approaches and non-government organizations**

NGOs such as Save the Children, PLAN, Child Fund, Catholic Relief Services, and Adventist Relief Agency (ADRA), are among the key organizations involved in education emergencies. Many of these were already operating in affected countries before the outbreak of conflicts and emergencies. By 1999, there were 46 NGOs working in education in Afghanistan. They focused mostly on primary and non-formal education service provision. More than 28 of these NGOs

took on quasi-governmental roles in Afghanistan. More than 50 NGOs made up the education cluster working in Haiti during the week of 7-12 March 2010. Many of these, like Save the Children, Catholic Relief Services, PLAN, Pahre-Haiti, and Fonds de Parrainage National (FPN), had been working in the area of education before the 2010 earthquake (UNICEF, 2010a). Most NGOs work directly with communities because of the fragility and weaknesses of the government and the reluctance of many international agencies to invest in public health, education and nutrition services. Education Cluster leaders, and INEE and IASC guidelines advocate working directly with communities to re-establish educational services (IASC, 2006; INEE, 2004; Save the Children 2004). Unfortunately, much of the work on education emergencies has been conducted in regions experiencing conflicts and war – Afghanistan, Somalia, Colombia, Rwanda, East Timor and Mozambique, among others. In these situations, the entire fabric of children's lives – their homes, schools, health centers and religious institutions – have been destroyed (Machel, 1996). Education emergencies related to natural disasters have not enjoyed the level of attention and investment as have emergencies related to armed conflicts.

However, education emergencies are common in regions experiencing sudden, catastrophic natural disasters such as the 2010 earthquake in Haiti, which destroyed 50% of schools and killed more than 270,000 people (UNICEF, 2010a). As of early 2011, more than a million people were still living in tents, down to about 800,000 in November, 2011 (UNICEF, 2011). Such catastrophic events are often sudden but rare. Conflicts, on the other hand, are prolonged and usually leave adequate time for response before another conflict event occurs. Hurricanes are different. The section, which follows, highlights these differences.

## **2.5 HURRICANES AND EDUCATION EMERGENCIES**

This section highlights gaps in the literature regarding education emergencies triggered by chronic and cyclical low-intensity hurricanes. The recurrent nature of hurricanes and their cumulative impacts, combined with silent emergencies like poverty exacerbate education emergencies, making it difficult for affected countries to cope using their own resources. This situation in turn contributes to endemic cycles of poverty (Anwar, 2008).

### **2.5.1 Non-priority during hurricanes**

Restoring education systems becomes difficult and long-term because as mentioned before, chronic low-intensity, education emergencies rarely attract wide media attention or humanitarian assistance. Moreover, although education was officially declared as the fourth pillar of humanitarian assistance in 2002, it still is not a high priority for agencies and specialists in the field of humanitarian assistance (Esnor, 2010; Madfis, Maetyris & Triplehorn, 2010). Between 2006 and 2009, more than \$15 billion were disbursed globally for humanitarian assistance under the United Nations Central Emergency Response Fund (CERF); however, only 2% was devoted to education emergencies (OCHA, 2010). Education was ranked 26<sup>th</sup> on CERF's disbursement list. Clearly, the money did not follow the policy declaration of education as the fourth pillar. Many specialists in humanitarian assistance and their agencies consider education to be developmental and the responsibility of national or local governments. Thus, education emergencies are poorly funded in general, SIDS such as Dominica have inadequate resources to meet educational needs resulting from cyclical low-intensity hurricanes, and their frequent and

recurrent nature poses serious policy and financial problems for national and local governments (see Government of Dominica, 2006).

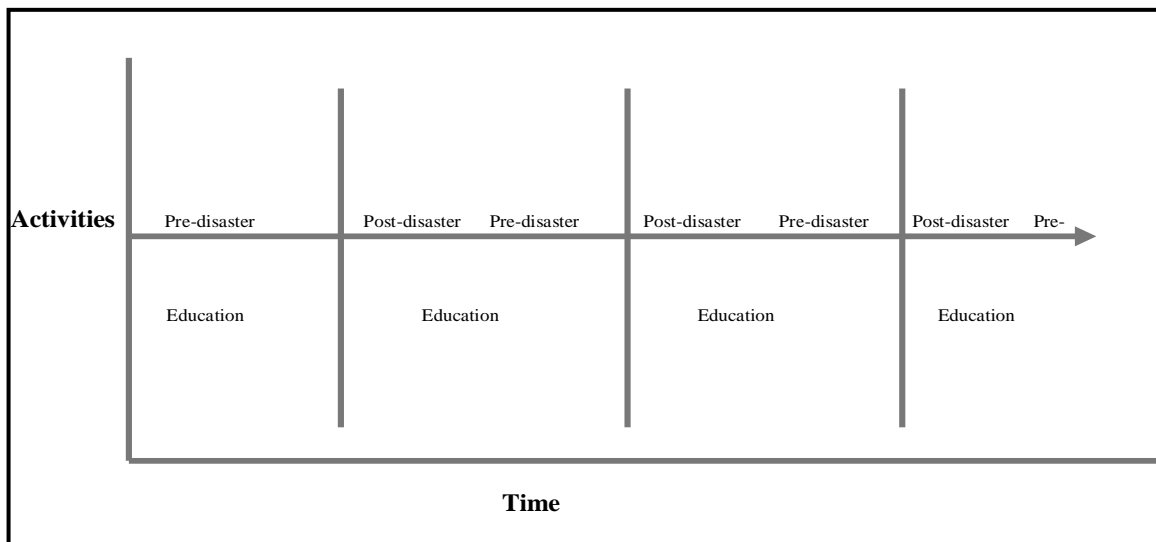
### **2.5.2 Frequency of hurricanes**

In the long term, the Caribbean region experiences on average 0.4 to 1.0 major hurricanes per year (Pielke Jr., Rubiera, Landsea, Fernandez, & Klien, 2003). Dominica, on the other hand, has a 10% chance of being hit by a hurricane annually compared to South Florida which has the highest probability of about 15% (op cit). Dominica is brushed or hit by hurricanes almost every three years (Williams, 2010). This means that children will experience about 4 hurricanes and their disruptions to their education by the time they graduate from high school.

The more exposed children were to hurricanes the more likely they were to show higher levels of PTSD and depression (Feitelberg, 2007). Hurricanes have, as already noted, negative impacts on student academic performance. Hurricanes affect children's life chances especially when they coincide with terminal stages of secondary education or around the time of high stakes examinations. Evidence reveals that since 1980, hurricanes in the Caribbean are increasing in frequency and intensity (Goldenberg, Landsea, Mestas-Nunez, Gray, 2001).

Often countries are preparing for new hurricanes while they are recovering from earlier storms (Anwar, 2008). Dominica had back-to-back major hurricane in 1979 and 1980 and low-intensity hurricanes in 2007 and 2008. In 2008, in the space of one month, four hurricanes hit or brushed past Haiti highlighting the cumulative effects. Anwar (2008), in his discourse on recurring natural disasters on chronic poverty contends, "The repeated nature of natural disasters is such that for every small gain that results from public and private initiatives there are many

larger losses” (p. 287). The experiences with hurricanes in the Caribbean are therefore, chronic given the frequency with which they occur and their relative invisibility with respect to the international humanitarian community. Figure 6 depicts a framework for understanding the recurrent, cumulative and chronic nature of response of low intensity education emergencies. Response and preparation activities occur simultaneously, placing pressure on already limited resources.



**Figure 6.** Understanding Education and Chronic LIH

Whereas most disasters and emergencies, particularly conflicts and earthquakes, are unpredictable, hurricanes are predictable, can be forecast and tracked using reconnaissance aircrafts and satellite imagery. The accuracy with which their speed, direction and wind strength are measured has improved markedly over the past 30 years (Barrett, Leslie & Fielder, 2006). Furthermore, they have a dedicated annual season and can be anticipated and prepared for.



Proactive approaches in combination with reactive activities can be adopted to reduce their impacts.

In their discourse on reframing disaster policy for vulnerable communities, Comfort, et al (1999, p. ) noted, “we must change the policies of today that rely heavily on sending assistance only after tragedy has occurred, assistance must be sent before to aid.” This is crucial since emergency or disaster management remains the responsibility of national and local governments.

### **2.5.3 The role of national governments**

A review of the literature on the roles and responsibilities of formal and non-formal actors involved in emergencies in developing countries shows that national government or their agents play a leading role and are often at the apex of a hierarchy of disaster management (Freeman & Kunreuther, 2002; Khan & Rhaman, 2007; Osei, 2007). Of the 32 articles reviewed, 26 identified national governments as the main actors (see Ahrens & Rudolph, 2006; Luchi & Esnard, 2008; Osei, 2007; Sinclair, 2002). National governments were identified as responsible for setting legal, policy and plan frameworks or (Aldunce & Leon, 2007; Chhetri, 2001). With respect to education emergencies, national governments are responsible for pre-and post-disaster activities because education is mainly a public responsibility in most countries. An exception to this rule is Haiti with a dysfunctional education system that is 80% private in nature.

Government roles might include designing school facilities for hurricanes and earthquakes; planning for recovery, restoring damaged buildings and providing temporary spaces for destroyed and damaged schools (Sinclair, 2002). However, the lack of financial and technical resources especially but not only in SIDS weakens the capabilities of national

governments to deal with disaster and emergency management (Khan & Rahman, 2007; McEntire & Myers, 2004).

This next section, then, reviews the literature on the economic and financial impacts of emergencies in developing countries vulnerable to disasters and emergencies.

#### **2.5.4 Economic impacts of disasters on developing countries**

A review of the literature on disaster impacts confirms developing countries suffer heavier losses than their developed counterparts (Rasmussen, 2004; Ghesquiere & Mahaul, 2007; McNabb & Pearson, 2010). An analysis of a large sample of natural catastrophes between 1980 and 2004 found that fatalities were higher in low and middle income (LAMI) countries than in more developed nations (Linneroth-Bayer, Mechler & Gflug, 2006). Similarly, losses as a proportion of gross national income (GNI) were higher and correlated negatively with per capita income (op cit). Small countries were found to be particularly vulnerable, with the islands of the Eastern Caribbean being among the most disaster-prone (Collymore, 2004; Cummin & Mahul, 2009; Rasmussen, 2004). Table 3 shows the extent of the impact of major disasters on small islands over the past 40 years. Developed counterparts are given for comparison.

**Table 3.** Major Disasters in the Last 40 Years

<i>Year</i>	<i>Natural Disasters</i>	<i>Country</i>	<i>Region</i>	<i>Estimated Direct loss (US\$M)</i>	<i>Direct Loss (% of GDP)</i>
<b>LARGE ECONOMIES</b>					
2005	Hurricane (Katrina)	USA	North America	125,000	1.1%
1995	Earthquake	Japan	East Asia	100,000	3.2%
1998	Flood	China	East Asia	30,000	0.7%
1992	Hurricane (Andrew)	USA	North America	26,500	0.4%
<b>SMALL ISLAND ECONOMIES</b>					
1988	Hurricane (Gilbert)	St Lucia	Caribbean	1,000	365%
1991	Cyclone (Val & Wasa)	Somoa	Oceania	278	248%
2004	Hurricane (Ivan)	Grenada	Caribbean	889	203%
1990	Cyclone (Ofa)	Somoa	Oceania	2000	178%
1985	Cyclone (Eric & Nigel)	Vanuatu	Oceania	173	143%
2010	Earthquake	Haiti	Caribbean	8,000	114%
2009	Tsunami	Somoa	Oceania	120	22%

Source: Ghesquiere & Mahul, 2010

As Table 3 shows, the impacts on small island economies are almost four times their GDP in some cases. They were more than 12 times as exposed as the average country (Rasmussen, 2004).

Of the 6,000 natural disasters recorded globally during 1970 – 2002, about 75% of the events and 99% of the people affected were in developing countries (Rasmussen, 2004). During that same period, 34 of the 44 natural disasters recorded in the Eastern Caribbean were due to storms or hurricanes. The average cumulative damage was 66% of GDP compared to a worldwide average of 21%. Further, it was observed that the poorest and most marginalized communities in these countries were the most affected by disasters (Goes & Skees, 2003). This

situation is likely to worsen with the increasing frequency of hurricanes especially in the North Atlantic (National Center for Atmospheric Research, 2007; Hatton, 2010).

The increase in frequency of weather-related catastrophic disasters and the increasing exposure of developing countries to them is expected to result in major economic impacts (Gurenko & Lester, 2004). Especially in developing countries, disasters result in the immediate contraction of economic output, worsening of external and fiscal balances, and increased poverty (Rasmussen, 2004). National governments face liquidity constraints after these disasters (Ghesquiere & Mahaul, 2007). Disasters also weaken revenue bases, hamper tax administration and collection; increase pressure on spending and increase the devolution of resources to short-term disaster relief operations (Hofman, 2007). National governments also face pressure to provide compensation or financial support to populations and sometimes the business sector to restore destroyed buildings (Hofman, 2007; Hofman & Brukoff, 2006).

In addition to their effects on economic welfare, disasters also affect the social welfare of countries (Vakis, 2006). The poor are made poorer as a result of lost income, lost capital in terms of property and equipment, and the death of family breadwinners. Affected countries have found several ways to respond financially to these economic impacts. The section which follows identifies some ways in which they respond.

## **2.6 CURRENT FINANCIAL RESPONSES**

To meet immediate expenditure needs, disaster-prone developing countries have relied on post-disaster or ex-post funding in the form of grants and loans from external sources (Cashin &

Dyczewski, 2006; Hofman, 2007). They also divert limited budgets and development funds, take on additional loans, and/or accept international aid for humanitarian assistance and reconstruction (Cashin & Dyczewski, 2006; Goes & Skees, 2002; Linnerooth-Bayer & Mechler, 2007). They also establish contingency funds but often these are inadequate. In 1996, the Government of Mexico established a catastrophe reserve fund (FONDEN). In 2005, the fund was exhausted forcing the government to turn to international facilities for supplementing its reserve fund (Linnerooth-Bayer & Mechler, 2007). Having established a Calamity Relief Fund and a National Calamity Contingency Fund, India resorted to international humanitarian assistance after the 2004 Asian Tsunami, despite having refused assistance initially (Price & Mihir, 2009).

International aid or humanitarian assistance appears to be driven by the anticipation of aid among affected countries and the moral difficulty donors face in withholding such aid (Hofman & Brukoff, 2006). International assistance has been shown to be inadequate because of the increase in the numbers and impact of major disasters and their cumulative costs throughout the world (Smillie & Minear, 2003). It is generally believed also that “little new money” is actually dedicated to humanitarian assistance because existing funds are simply repurposed to meet emergency needs (Wathne & Hedger, 2010). Additionally, humanitarian aid pledges for many countries experiencing humanitarian emergencies greatly outstrip actual commitments (Wathne & Hedger, 2010).

Developing countries have been criticized for their over-dependence on ex-post responses and financing. Often these take the form of humanitarian aid and remittances from the diaspora because of limited domestic fiscal resources available to these governments and to communities

(Gurenko & Lester, 2004). This may also be due to the manner in which disasters are perceived and treated. For example, an evaluation of the World Bank's assistance to natural disasters shows:

Countries affected by disasters, as well as the donors that try to help them, including the Bank, have generally treated disasters as interruptions in development rather than as a risk that is integral to development. At the country level, few Country Assistance Strategies (CAS) and Poverty Reduction Strategies (PRSs) mention disaster risks even in countries that have experienced multiple events resulting in major disasters. At the project level objectives have mainly provided for short-term fixes and rarely addressed the root causes of the disastrous impacts of natural disasters (World Bank IEG, 2006, p. xxi).

Ex-post assistance for emergency relief and reconstruction, though essential, has failed to reduce exposure to disaster risks, and to ensure sufficient recovery funds for governments and individuals (Linnerooth-Bayer, Mechler & Pflug, 2006, Linnerooth-Bayer & Mechler, 2007). According to Mahul & Gurenko, "when it comes to funding natural disasters ex-post financing is not the right approach." (2006, p. 3) Estimates show that countries will save seven dollars on recovery cost for every dollar spent on disaster risk reduction (ADB, 2008). Donor communities are recognizing the need therefore, to place greater emphasis on prevention and preparedness, and consequently on ex-ante or pre-disaster funding (Linnerooth-Bayer, Mechler & Gflug, 2006; Freeman, n.d.). The overall objective of ex-ante funding is to mitigate long-term impacts of disasters and to shift responsibility for risk reduction away from national governments to individual citizens and households. The following section discusses ex-ante funding.

### **2.6.1 Ex-ante financing**

The financial instruments generally available for emergency assistance had been classified as ex-ante and ex-post (Association of Caribbean States, 2007). Ex-ante financing covers prevention and mitigation or pre-disaster activities. Ex-post financing covers recovery and reconstruction or

post-disaster activities (Freeman, n.d.). Financial investments are essential on both sides of natural disasters or other emergency events (before and after) since they often cannot be prevented. Reducing their impacts usually requires ex-ante funding for pre-disaster activities, specifically for prevention and preparedness. The Association of Caribbean States (2007) produced a list of ex-ante and ex-post disaster financing mechanisms. It identified nine ex-ante instruments which governments can access for risk reduction and transfer. Table 4 is a summary description of these instruments. They include loans, grants, contingency financing, catastrophe bonds, earmarks, SWApS, and insurance. Table 4 also describes the scope of each of these instruments as well as the institutions responsible for managing them.

**Table 4.** Funding facilities Available to Developing Countries for Ex-ante Disaster Funding

<b>Financing Facility</b>	<b>Type of Funding</b>	<b>Institution responsible</b>	<b>Scope of Funds</b>
<b>Disaster Prevention Sector Facility</b>	Loan	Inter-American Development Bank	This is available to member states at up to \$5 million to take an integrated approach to reducing and managing risks to natural disasters before a disastrous event. Among the areas for which it is available is preparedness to enhance a country's readiness to cope quickly and effectively during an emergency; risk and vulnerability assessment and reduction; adopting risk transfer mechanisms; and mitigation of structural sources of vulnerability.
<b>Prevention and Mitigation Project</b>	Investment Loans	World Bank	In addition to emergency assistance, these loans fund free-standing investment projects for disaster prevention and mitigation in countries prone to specific types of emergencies. Prevention and mitigation projects include developing national emergency strategy; establishing adequate institutional and regulatory frameworks; risk and vulnerability research and assessment; reinforcement of vulnerable structures and adjusting building and zoning codes; and the acquisition of hazard reduction technology.
<b>Disaster Mitigation Facility for the Caribbean (DMFC)</b>	Grant	Caribbean Development Bank	These grant funds promote natural hazard risk reduction in member states. USAID provided \$3 million to augment CDB resources in this initiative.
<b>Sector wide Approaches (SWApS)</b>	Risk transfer Insurance	Donor Entity and Recipient Government	These are transactions in which the insurer undertakes to make payments to an investor in a specified portfolio of securities. In return the investor assumes the insurers liabilities in the event of a disaster. What is to be financed is decided on by both parties and supports a single sector policy and expenditure.
<b>Catastrophe</b>	Risk	Financial institutions	The party transferring the risk issues a special bond. In the

**TABLE 4**  
**(Continued)**  
**Bonds**

	transfer Bond	issuing bonds	event of a disaster, interest payment by the insurer may be called or the insurer may receive a percentage of the bond's principal depending on the magnitude of the catastrophe and the terms of the contract. It is issued by insurance companies to spread risks by transferring some of the risk through capital market by floating catastrophe bonds where the risks are too great without such a mechanism. It is an insurance-to-insurance transaction.
<b>Weather Derivatives</b>	Payment contracts	IMF; International Finance Corporation (IFC)	<p>Payments are made if triggers with respect to some weather outcomes are exceeded over a specified period of time.</p> <p>The IMF is currently developing this mechanism for low-income countries and the IFC is conducting market feasibility studies in Ethiopia, Morocco, Tunisia and Nicaragua.</p>
<b>National Disaster Funds (NDFs)</b>	Contingency funding	National Governments (e.g. FONDEN in Mexico)	<p>These initiatives involve the establishment of disaster funds with adequate resources to meet critical needs without altering normal public finance at the national, regional and local levels. They are used to reduce the negative effect of natural catastrophes and strengthen disaster preparedness and response capabilities.</p>
<b>Community Financing Mechanisms</b>	Disaster Earmarks	Local communities and governments	<p>These mechanisms channel resources to communities that need them most; to reduce the vulnerability of impoverished groups:</p> <ol style="list-style-type: none"> <li>1. Social or municipal funds – financed by national ministries, multi or bilateral agencies, and disbursed through municipal or local entities;</li> <li>2. Community development projects financed by national and international NGOs or other agencies;</li> <li>3. Micro-enterprise and small business credit programs;</li> <li>4. Informal financing mechanisms such as local informal credit markets or systems for pooling resources (e.g. sous-sous or partner in the Caribbean (Beddoe, Bernard, Rohlehr &amp; Seepersad, 2001)</li> </ol>

Source: Association of Caribbean States (2007) (data only)

Ex-ante financing has been shown to have decided advantages over ex-post financing. It tends to guarantee a more rapid access to capital in the short and long run, and it avoids budgetary diversion and additional loans (Goes & Skees, 2003). It is designed to provide incentives for disaster planning and mitigation (Kunreuther & Linnerooth-Bayer, 2002; Skees et al., 2002). It also provides immediate liquidity to governments for post-disaster relief and the reconstruction of damaged government properties and infrastructure (Cummins & Mahul, 2009).



If may be asserted that countries must be financially prepared for disasters through securing financial resources in anticipation of the occurrence of disasters and emergencies.

In an Inter-American Development Bank (IDB) overview of natural disaster risk in Latin America and the Caribbean, Charveriat notes,

“...financial preparedness requires the quick mobilization of low-cost fund to finance emergency, rehabilitation and reconstrucion activities through insurance, national reserve funds and contingency financing. It also involves a quick disbursement capacity of funds at both the national and local levels as well as transparent procurement practices to maximize the efficiency of reconstruction funds (2000, p. 76).

In addition to being able to access financial resources, having the ability to disburse these funds is of critical importance. However, the IDB focus is still ex-post A review of literature between 2000 and 2010 on ex-ante financing for catastrophic events appears to show a preference for risk transfer through insurance. These studies include Michler-Kerjan (2001); Keipi & Tyson (2002); Goes & Skees (2003); Gurenko & Chester (2004); Linnerooth-Bayer & Mechler, (2007); Cummins & Mahul (2009).

## **2.6.2 Insurance**

The literature identifies three forms of insurance available for hedging disaster losses or risk transfers. These are traditional insurance<sup>18</sup>, reinsurance<sup>19</sup> and CAT bonds<sup>20</sup> (Keipi & Tyson, 2002; Kunreuther & Linnerooth-Bayer, 2002; Linnerooth-Bayer & Mechler, 2007). They are

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<sup>18</sup> These are local or regional commercial entities that cover risk for a premium.

<sup>19</sup> These are the insurance companies' insurers. Insurance companies with inadequate capital insure their own risks with larger insurance companies like Lloyds of London (Hofman and Brukoff, 2006).

<sup>20</sup> These are contract-based bonds taken with investors on capital markets using a Special Purpose Vehicle. A principal sum is paid and held in bond and paid out to insurers should disasters occur (Ghesquiere & Mahul, 2010).

construed as ex-ante financing because they are taken out before disasters (Hoffman & Brukoff, 2006). However, they mature after disasters or emergencies. They appear, therefore, to be ex-post funding insurance. However, they have the advantage of influencing disaster prevention activities, although indirectly because they often have risk reduction pre-conditions that are to be met before for coverage is approved. Meeting these conditions often reduce the cost of premiums (Kunreuther & Linnerooth-Bayer, 2002; Linnerooth-Bayer & Mechler, 2007). At the same time, insurance may constitute moral hazards in the sense that people may tend not to take preventive action because they are covered by insurance or because governments act as insurers (Kunreuther & Linnerooth-Bayer, 2003). Notwithstanding, insurance has been depicted as expensive for developing countries, making them averse to insurance (Kunreuther & Linnerooth-Bayer, 2003).

Administrative costs, marketing expenses and risk management services of insurers or reinsurers are high (Kunreuther & Linnerooth-Bayer, 2002). The insurance pool must be larger than those at risk, which is not the case in developing countries. Individual households in developing countries are unable to afford catastrophic insurance, and they become dependent on their governments and their own savings, if any, to recover from their losses due to natural disasters.

National governments in developed countries tend not to insure their assets against disasters, operating instead as risk neutral (Kunreuther & Linnerooth-Bayer, 2002; Ghesquiere & Mahul, 2010). In addition, they often act as insurers for homeowners and businesses (Linnerooth-Bayer & Mechler, 2007). This neutrality does not appear to hold for developing countries and SIDS are too small to diversify risks. The high level of indebtedness of some of these countries also makes securing credit difficult. Governments spread risks across

generations through taxation to cover disaster losses but earmarking of funds make reallocation of local funds during disasters difficult as well (Ghesquiere & Mahul, 2010,).

A review of the management of catastrophic flood events in emerging economies, shows a desire for national governments like Poland's and India to transfer responsibilities for disasters to "second level administrative authorities" (Kunreuther & Lineerooth-Bayer, 2002, p. 630). Financial support and institutional capabilities are not passed on from central levels, leaving districts and communities to depend mainly on local funds and mutual support mechanisms, and international and national agencies and NGOs, where they exist (Kusumasari, Alam & Siddiqui, 2010). International agencies tend, therefore, to step in to meet the financial shortfalls related to disasters and emergencies in developing countries. However, they are increasingly moving toward the provision of ex-ante support. Most of these international ex-ante disaster assistance arrangements are bilateral. OCHA confirms the difficulty of accessing ex-ante funding and identified ten international disaster assistance sources of such funding.

### **2.6.3 International disaster assistance**

Several developed countries and their regional affiliates have bilateral arrangements and institutions to assist developing countries and small island states with ex-ante funding for disasters. These countries and (their institutions) are Australia (AusAID); Canada (CIDA); The United Kingdom (DFID-CHF, HRF, DRRF); European Union (ECGHO & DIPECHO); Japan (Ministry of Foreign Affairs); Norway (NORAD); Sweden (SIDA); Switzerland (SDC), New Zealand (NZAID) and the United States (USAID) (OCHA, 2007).

These institutions earmark the activities for which funds are available. DFID, SIDA, SDC, DIPECHO and DFID specify disaster preparedness in their funding protocols. AusAID, CIDA, DFID–CHF; DFID – HRF; Japan; NORAD, SIDA, and USAID disburse finances to or through local or international NGOs, UN agencies or international organizations such as the Red Cross. EU-ECHO; EU-DIPECHO; DFID – DRRF; SDC; and Japan provide funding directly to disaster prone regions or countries. These are either investment funding, development funding or funds earmarked for risk reduction (OCHA, 2007).

The SDC provided assistance to Eastern European Countries, specifically. The European Union (ECHO & DIPECHO) provides funding to six specific regions in the Caribbean, Latin America and Asia. NZAID provides assistance for Pacific Islanders to attend regional and international conferences to strengthen their local ownership of disaster-related development processes (OCHA, 2007).

Earmarking appears to be one of the distinctive features of ex-ante funding for disasters (Wathne & Hedger, 2010). This results in the disconnection between domestic and foreign policies (Walker & Pepper, 2007; Ghesquiere & Mahul, 2010; Freeman, n.d.). In addition to disaster assistance, developing countries are now being encouraged to include disaster risk reduction and preparedness in development loans or grants proposal. The World Bank and its regional affiliates have prepared strategic and action plans for financing Natural Disaster Assistance (World Bank IEG, 2006). The Caribbean Development Bank (CDB) and Asian Development Bank (ADB) developed policies and action plans for the inclusion of risk reduction in development loans with countries (ADB, 2004; ADB, 2008; CDB,2009). In addition, the CDB instituted a program for Proactive Assistance for Risk Reduction and Climate Change

Adaptation among member states (CDB, 2009). This promotes the implementation of risk reduction measures, including preparedness, mitigation and prevention.

Thirty-nine countries and eight international organizations established a Global Facility of Disaster Reduction and Recovery (GFDRR) under the management of the World Bank, to assist developing countries with the implementation of the Hyogo Framework for Action<sup>21</sup>, 2005-2015. The fourth priority of the Framework advocates for the reduction of disaster losses through the adoption of disaster risk reduction strategies (GFDRR, 2010). Its functions include mainstreaming disaster risk reduction by including related strategies in development projects. The fund consists of three tracks. Track III serves as a source of funding for countries in the immediate aftermath of disasters for disaster recovery and reconstruction (GFDRR, 2010). It also advocates for the development of the insurance sector in developing countries, particularly for insuring homes, small businesses and agriculture through its Disaster Risk Financing and Insurance (DRFI) Program (GFDRR, 2010).

Two catastrophic risk insurance facilities were developed in conjunction with the GFDRR. These are the Caribbean Catastrophe Risk Insurance Facility (CCRIF) and the Turkish Catastrophe Insurance Pool (TCIP).

The CCRIF is a regional insurance facility that provide short-term financial support to Caribbean member states affected by hurricanes and earthquakes. The facility was begun with donor funding from international aid agencies such as the EU, the World Bank, and the

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<sup>21</sup> The Hyogo Framework for Action (HFA) is a 10-year plan to make the world safer from natural hazards for building the resilience of nations and communities to disasters. It was adopted by 168 Member States of the United Nations in 2005 at the World Disaster Reduction Conference, which took place just a few weeks after the Indian Ocean Tsunami (UNISDR, 2011: <http://www.unisdr.org/we/coordinate/hfa>)

governments of developed countries including Japan, Canada, UK, France, Ireland and Bermuda and membership fees by participating governments. Through this facility, member countries of the Caribbean are able to purchase catastrophic insurance at the lowest possible prices (Ghesquiere & Mahul, 2007; 2010; Auffret, 2003). Disbursement, however, gives preference to intense and rare disaster events like hurricanes measuring at least Category 3 on the Saffir Simpson Scale. Low intensity hurricanes are not covered under this facility. While CCRIF provides funding directly to national governments in the event of disasters or emergencies, the TCIP is tailored to households.

The TCIP was established in 2000 as a consortium of 29 insurance companies in Turkey. They provide households with insurance to meet government's mandated insurance coverage for all homeowners at affordable premiums. According to TCIP, the compulsory earthquake insurance reduces the burden on the national budget and the need for additional taxes (TCIP, n.d; Linnerooth & Mechler, 2007).

Another facility is the global Central Emergency Response Fund (CERF) that was set up as a central donation facility where contributions can be made year round. It facilitates the prompt response of the United Nations in situations of emergency by providing the financial support to be able to do so (United Nations, 2007). OCHA is responsible for managing the fund. From 2006 to 2010, only about \$26 million (1.5%) of the \$1.8 billion of CERF funds were disbursed to the education sector (United Nations, 2007b). UNICEF was the major recipient of education sector funding. It was mainly spent on African and Asian countries for under-funded education emergencies or rapid responses. Many countries, however, often resort to Emergency response loans to deal with disasters.

#### **2.6.4 Emergency Response Loans**

Direct ex-post loans or the diversion of monies from already disbursed development loans appear to be common instruments for financing disasters (Linnerooth-Bayer & Mechler, 2007). These authors believe that governments generally are able to lower the impacts of disaster events by setting up their own, though inadequate, calamity or contingency loans or funds using domestic resources. As noted earlier, India established its own Calamity Relief Fund and National Calamity Contingency Fund; however, these proved inadequate after the 2004 Asian Tsunami (Price & Mihir, 2009).

The World Bank and regional development banks like the Asian Development Bank and the Caribbean Development Bank have developed emergency response policies and funds as a result of the failure of existing pre/post-disaster mechanisms to deal with disasters (ADB, 2004; CDB, 2008). The World Bank disbursed over \$14 billion, and the Asian development bank disbursed 5.6% of their loans for natural disaster response and rehabilitation to developing countries by 2002 (Kunreuther & Linnerooth-Bayer, 2003).

New loans can be difficult to obtain after disasters because of severe damages to the economy, uncertainty regarding national economic prospects, and governments' inability to repay these loans (Keipi & Tyson, 2002). Loans result in increased indebtedness at times when, as Table 3 shows, countries have suffered large economic losses from disasters. A related alternative approach is the refinancing of existing loans (op cit). Refinancing, however, distorts the goals of the original credits and may reduce the efficacy of the execution of original projects. Refinancing is perceived as bad management because it tends to divert funds from original objectives to emergency uses and fosters a dependence on ex-post financing (Keipei & Tyson,

2002). Other more creative, grassroots microfinancing instruments like microinsurance have emerged to fill the funding gaps.

### **2.6.5 Microinsurance**

Microinsurance is another financial instrument that is available for ex-ante disaster funding. Available to households and businesses, microinsurance may reduce dependence on national or sub-national governments for disaster insurance. Indirectly, microinsurance may reduce disaster costs to national governments but it may increase them directly to individual citizens and households, particularly the poorest, who are among the hardest hit during disasters.

The concept of microinsurance gained prominence when the United Nations declared 2005 as the Year of Microcredit (Mechler, Linnerooth-Bayer & Peppiatt, 2006). Microinsurance provides “low income households and businesses with affordable and accessible insurance for death, health expenses, loss of small scale assets, livestock and crops in the event of a flood, typhoon or natural disasters” (Mechler, Linnerooth-Bayer & Peppiatt, 2006, p. 3). This is important because it reduces dependence on national governments and their finances. However, as credits, these must be repaid. Mechler, Linnerooth-Bayer and Peppiatt (2006) identify two types of micro insurances - traditional and index-based insurance<sup>22</sup>.

In summary, emergency responses are affected by resource availability and the capacity for resource disbursement (Comfort, 2004). Developing and SIDS appear to lack both. International assistance (often in the form of humanitarian aid) that was once abundant is

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<sup>22</sup> Index-based insurance are contracts written against a physical trigger such as rainfall as measured at a regional weather station (Kunreuther & Linnerooth-Bayer, 2003).



dwindling due to the prevalence and high cost of disasters (Save the Children, 2007; World Bank, 2006). Bilateral funding agreements between developed countries and their poorer, vulnerable counterparts serve as safety valves but these are mostly earmarked funds which are not always congruent with the priorities of national governments. The failure of ex-post funding is shifting focus to ex-ante funding through development projects and insurance.

Disaster risk reduction insurance matures as ex-post funding, but it can lower premiums since its pre-condition reduces risks and vulnerability to disasters or emergencies. However, those premiums remain relatively high and unaffordable for households in developing and small island developing states. Governments, therefore, bear the greater responsibility for disaster recovery forcing some into regional insurance facilities to mitigate their own losses.

## **2.7 SUMMARY OF LITERATURE**

The literature on education emergencies and emergency financing can be summarized as follows:

1. Research and work in education emergencies have focused heavily on loud or complex emergencies and mostly on those resulting from wars and conflicts.
2. Education emergencies triggered by high intensity, natural calamities and in particular hurricanes are less prevalent in the literature reviewed, and chronic low-intensity hurricanes appear to be virtually absent.
3. During emergencies and disasters, educational infrastructures are often destroyed or suffer extensive damage causing widespread disruptions for many children, families, educators and communities.
4. The recovery of national education systems has not been treated as top priority during emergencies. Instead, standardized programs and strategies focusing on child protection developed by international humanitarian agencies tend to

dominate humanitarian responses. Many are implemented alongside existing education systems.

5. Emergency education is underfunded, and financial allocations for education are often cut during austerity after crises. Educational infrastructures are often in disrepair long before emergencies, leaving them at a major risk for additional damage, destruction and disruption.
6. Very little emergency financing is directly available or earmarked for the recovery of education systems. However, a few bilateral and multilateral agencies have funds earmarked for education. They are insufficient to meet the needs for education reform and systems rebuilding, especially in SIDS and other developing nations.
7. Education emergency responses often do not address the fundamental factors that created the emergencies in the first place.

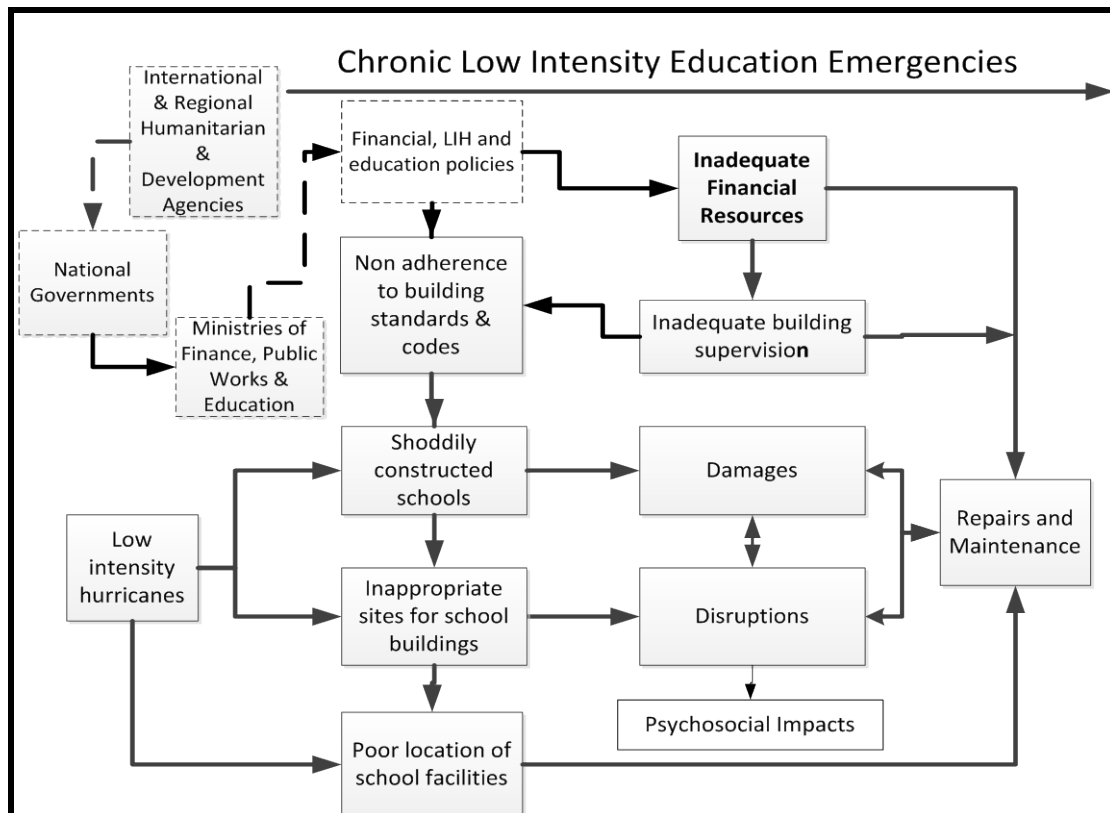
The absence of low intensity, chronic education emergencies in the literature on education emergencies, creates challenges for the development of a conceptual framework for its study among SIDS. The absence of humanitarian assistance during chronic low intensity, education emergencies and the problems inherent in ex-post financial arrangements shifts attention away from the humanitarian approach towards a developmental approach that places the focus on national governments to deal with such emergencies. It also shifts focus away from post to pre-disaster preparedness for emergencies. Such an approach places low intensity, chronic education emergencies within the development realities of SIDS that have limited funding, recurrent emergencies, and education systems in crisis that are especially vulnerable to damage, destruction and disruptions. Such an approach breaks new ground and leads to the proposal for an emergent conceptual framework based in part on personal experience and reflection.

## **2.8 EMERGENT CONCEPTUAL POLICY FRAMEWORK**

The absence of a body of literature or empirical research education and LIH, education emergencies presents a major challenge for the formulation of a conceptual framework to guide further research in this area. Grounded in a process of reflection and experience with hurricanes since 1979 and working within the education system of Dominica since 1982, a tentative framework was proposed for conducting field research. This framework was revised as the study unfolded. The final conceptual framework was based on the data analyses and findings of this study and is shown in Figure 7.

The “quick-fix,” humanitarian approaches to education emergencies have not addressed adequately the long-term problems of chronic low-intensity hurricanes especially in SIDS such as Dominica. This was because there has been no thorough examination or research into how countries address the issues for education. What was not known is whether international humanitarian organizations are involved in addressing this issue and if so how, given their heavy involvement in high intensity, prolonged or conflict-related education emergencies. Given, national governments bear ultimate responsibility for disaster management (Ahrens & Rudolph, 2006; Freeman & Kunreuther, 2002; Khan & Rhaman, 2007; Luchi & Esnard, 2008; Osei, 2007; Sinclair, 2002) and SIDS are already financially constrained, it was anticipated that only small amounts of local funds will be allocated for disaster management, particularly for sudden, catastrophic emergencies because they are rare. It was unclear how funding issues play out in situations where disaster events are anticipated, recurrent and the impacts are cumulative, as was the case of low-intensity hurricanes.

The framework assumed that national governments through their various ministries have full responsibility for disaster or education emergency management. It shows the involvement of international and regional development or humanitarian agencies and partners though limited and the missing dimension of financial, LIH and education policies and plans. Figure 7 depicts this framework for structuring the problem of education and LIH .



**Figure 7.** Conceptual Framework (Problem Structuring) for Education and LIH

This framework argues that it is the damage and destruction of school buildings, the resulting disruptions for children and their teachers and responses to them that constitute education emergencies associated with chronic, low-intensity hurricanes. It assumes the location and site of these buildings, the adherence to building codes and standards or the constructions may be key factors in risk and vulnerabilities to which schools are exposed.

This frame are grounded in two theories of disasters and emergencies, Dombrowsky's (1981) theory of disasters as an expansion of Carr's (1932) work as the "collapse of social and cultural protections" and Rosenthal, Boin and Comfort's (2001) theory of disaster as "political and administrative failures." Both argue disasters are not the events but the collapse of protections (Dombrowsky, 1981) and in failed political and administrative decisions. Together with Pigozzi's development approach, these form the basis for the adapted development approach being proposed for sustainably addressing education during LIH.

Limited finances may be affecting the kind and quality of building materials and supervision during construction, maintenance and repairs, and adequate personnel to monitor adherence to building codes and standards. The rugged topography may be forcing the location and siting of school buildings along river flood plains, the narrow coastal plains and in close proximity to steep slopes making them vulnerable to landslides, floods and sea surges associated with low intensity hurricanes. The research procedures were designed to investigate these assumptions and arguments guided by the four propositions outlined earlier.

### **3.0 RESEARCH PROCEDURES**

#### **3.1 EPISTEMOLOGY AND THEORETICAL PERSPECTIVE**

This mixed-method case study is policy-oriented. It is an investigation into how the Commonwealth of Dominica addressed education during chronic, low-intensity hurricanes (LIH). Epistemologically, it conforms to the pragmatic paradigm. Pragmatism focuses on lines of action. It utilizes methods of research that are seen to be most appropriate for studying the phenomenon at hand, that is, education, government assertions, actions and their consequences with respect to low-intensity hurricanes. “The essential emphasis is on actual behaviors (lines of action); the beliefs that undergird those behaviors (warranted assertions) and the consequences that are likely to follow from different behaviors (workability),” (Mertens, 2005, p. 36). Effectiveness, rather than truth, is the objective, that is, establishing that the results “work” with respect to the problem for which solutions are being sought (Mertens, 2005).

Pragmatists, therefore, are free to study what is of value to them, do so in different ways that they deem appropriate and in ways that bring about positive consequences within their value system (Tashakkori & Teddlie, 2009). They search for useful points of connections between existing behavior, the beliefs that drive them and the consequences of alternative behaviors (Mertens, 2005). These behaviors and beliefs are the foundations of policy positions and policies

that address or solve public policy problems like education during LIH. What counts, then are results or responses, the corresponding behaviors and the beliefs that drive them.

Much of disaster policy focus has been on response and recovery rather than mitigation and preparedness. Response and recovery have depended mostly on external assistance from friendly governments, international humanitarian and donor agencies in the form of grants, loans or fund transfers. There is need for change. “Disasters have become a policy problem of global scope...we must therefore change the policies of today that rely heavily on sending assistance only after tragedy has occurred” (Comfort, et al. 1999, p. 39). A shift to mitigation and preparedness would be anticipatory, provide assistance before disasters and would reduce costs significantly. Every dollar invested in mitigation and preparedness results in savings of seven dollars on response and recovery (ADB, 2004). It makes economic sense, therefore, to rethink existing policies. Issues regarding policies, however, are complex, wicked and messy.

Analysts are rarely faced with a single, well-defined problem with readily definable boundaries. Instead, they are faced with a tangled net of multiple problems, which, distributed throughout the policy-making process, are products of the interaction between external conditions and stakeholders who interpret the same external conditions in unknown ways (Dunn, 1997, p. 286).

Policy problems should be approached, therefore, from the perspective of what is known as well as what is unknown about them. Being unknown, “the origin of a social problem lie in the probes that declare it to be a problem” (Lindblom, 1990, p. 36). Social problem solving is a process of applying knowledge as well as a process of probing what to do in the presence of the unknown (see Lindblom, 1990, p. 29 - 44). This study applied probative strategies to define determine government’s actions with respect to education during low-intensity hurricanes, the assertions that drove them and their consequences. It will determine the extent to which there

has been policy and practice changes that reflected emphasis on mitigation and preparedness in addressing education during low-intensity hurricanes using a single case.

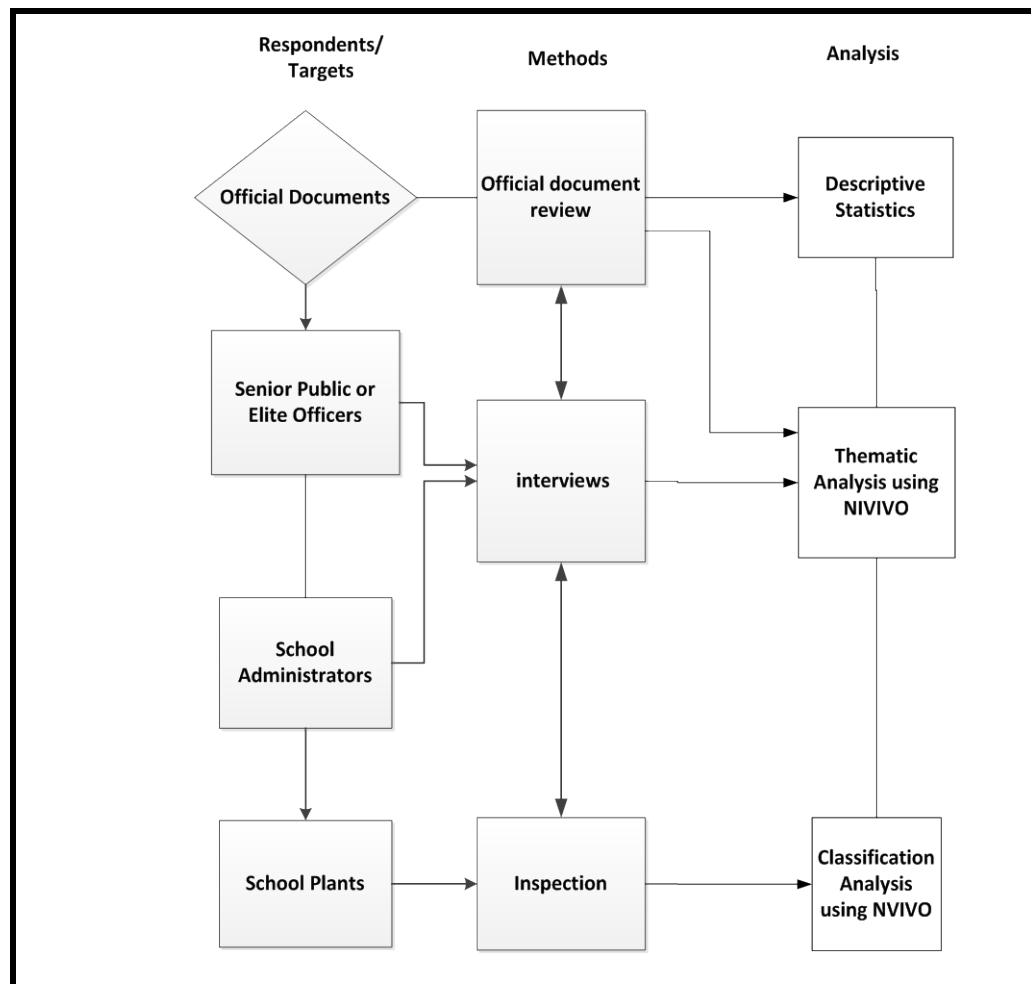
### **3.2 DATA COLLECTION**

No one source of evidence, on its own, is sufficient in single case studies. The use of multiple sources of evidence or mixed methods, each with its strengths and weaknesses, is a key characteristic of case study research (Graham, 2010). Mixed-methods usually utilize multiple sources of information to establish a chain of evidence and strengthen the construct validity of a study (Yin, 2004). They help to understand policy problems that exist in complex educational settings (Mertens, 2005). Mixed-methods are compatible with pragmatism, and combine the use of quantitative and qualitative data collection methods (Mertens, 2005; Tashakkori & Teddle, 2002).

Pragmatism provides, therefore, an underlying philosophical framework for mixed-method research (Tashakkori & Teddle, 2002). It allows researchers to use methods or combination of methods that work best for answering their research question (Johnson & Onwuegbuzie, 2004). Consequently, I reviewed official documents to identify and analyze documented policies that addressed education during low-intensity hurricanes (LIH) and the extent to which they guided action on education during emergencies. I interviewed key agents in the Ministries of Finance, Ministry of Education, and Ministry of Public Works in Dominica to determine and analyze their perspectives, roles and responsibilities. I also interviewed school principals for their perspectives and experiences with education during low-intensity hurricanes



(LIH). Finally, I inspected school buildings affected by low-intensity hurricanes (LIH) to determine the extent to which hurricane protective features were installed or re-installed during repairs and rehabilitation. Appendix E is a summary of these data collection and analytic strategies and Figure 8 below outlines categories of respondents/targets, data collection and analytical methods used in this study.



**Figure 8.** Respondents/Targets and Data Collection Methods used in this Study

The remainder of this Section provides details on these mixed methods: documents reviews and interviews and inspections as well as data collection strategies and analyses based on Figure 8.

### **3.3 SINGLE CASE METHODOLOGY**

A single case study investigates an entity – individual, community or country to answer specific research questions, sometimes stated loosely, using a range of evidence available in the case setting to answer these questions (Graham, 2010; Yin, 2004). Single case studies are prevalent in education emergency research. The edited works of Retamal & Aguilar (1998) are a compendium of case studies and commentaries. Case studies lend themselves to in-depth research (Yin, 2004). In-depth research is essential as a foundation for policy and programmatic interventions. In the case of Dominica, this is important for investigating and understanding the dialectics and complex contexts of education during low-intensity hurricanes. I selected Dominica because it is considered one of the most vulnerable countries in the Caribbean due to its high risk for volcanoes, earthquakes and hurricanes (Collymore, 2004; Government of Dominica, 2012, Rasmussen, 2009).

Second only to Florida, Dominica has a 10% change of being hit or brushed by a hurricane each year with average wind speed of 108 miles per hour, that is, Category 2, or low intensity hurricane on the Saffir Simpson Scale (Williams, 2010). Dominica could be brushed, therefore, or hit directly every two and a half years. This means students would experience about five low-intensity hurricanes by the time they graduated out of high school.

Dominica represented, therefore, a rich data source for studying education and low-intensity hurricanes. I also selected it because I was familiar with that case and because it was expensive to include other cases since my research budget was limited. Given the dearth of policy-related research on education during low-intensity hurricanes (LIH), this study established a foundation for future studies. This foundation would serve as a model for conducting similar research elsewhere. Given the varied and complex nature of the research context, I used mixed-methods data collection to identify, corroborate and validate findings, and to capture the rich data and complexities of this phenomenon (Yin, 2004).

### **3.3.1 Official documents**

Official documents contained the essential policies that revealed government's perceptions about disasters and LIH as well as identifying and analyzing its policy positions on these in Dominica. I conducted preliminary word searches of these documents using search tools embedded in Microsoft Word and Protected Document File (PDF) to identify relevant key words related to hurricanes, disasters, emergencies and education in emergencies. Appendix A is template for initial data collection. Where they existed, I analyzed these documents in more detail using Computer –Assisted Qualitative Data Analysis Software (CAQDAS) which are discussed fully in Section 1.4 on Data Analysis and Presentation. Table 5 shows the list of these preliminary documents and those selected for further analysis.

**Table 5.** Documents Subjected to Preliminary and Detailed Analysis

<b>Documented subjected to preliminary analysis</b>	<b>Documents subjected to detailed analyzed</b>
<b>Budget and budget estimates and addresses from 2004 to 2012</b>	Budget addresses, 2005/06; 2007/08; 2009/10; 2011 and 2012
<b>Medium Term Growth and Social Protection Strategy 2006, 2008 and 2012-2014</b>	Medium Growth and Social Protection Strategy, 2006 Medium Growth and Social Protection Strategy, 2012-2014
<b>Maintenance Policy and Manual (School Plant), 2011</b>	Maintenance Policy and Manual (School Plant), 2011
<b>Maintenance Report (Inception), 2011</b>	Maintenance Report (Inception) 2011
<b>Education Sector Plan, 2005 – 2010</b>	
<b>Plan to reduce the vulnerability of school buildings in Dominica, 1995</b>	
<b>National Disaster Plan, 2001</b>	National Disaster Plan, 2001
<b>Education Act 1997</b>	

All documents were in electronic formats to facilitate these searches. Their selection for detailed analysis was based on these LIH words and terms: “*risk reduction, vulnerability, preparedness, response, mitigation (prevention), hurricanes, recovery, emergencies, repairs, education and disaster management.*” Where one or more of these words or terms appeared, documents were analyzed further. Further analyses identified word or term frequencies and their contexts using an inductive approach (See Boyatzis, 1998).

Inductive approach is data driven, and involved identifying and coding themes as they emerged from the reading of documents and transcripts (Boyatzis, 1998; Silverman, 2000). This approach; a) condenses raw textual data into a brief, summary format; b) establishes clear links between the research objectives and the summary findings derived from the raw data; and c)

develops a framework of the underlying structure of experiences or processes that are evident in the raw data (Thomas, 2007, p. 237).

I used these key words and terms identified earlier to code and map themes, policy positions and perspectives on education during LIH. Other documents helped explore these themes further, for example, budget documents, 2004 – 2012 helped to determine the availability and allocation of financial resources and their implications for education during LIH. These documents also helped shape the content and scope of interviews described in the section which follows.

### **3.3.2 Interviews**

Interviews were conducted with elite or senior public officers in three Ministries: Finance; Education, and Public Works to determine how key actors addressed education during LIH. Interviews focused on their actions, assertions behind those action and their consequences.

Elite interviews are interviews with people who occupy senior management and board level positions within organizations or who are in close proximity to power (Harvey, 2011; Morris, 2009). Interviewers, then, need to gain the trust of these elite respondents in order to collect high quality data (Harvey, 2011). These interviews establish “conversational partnership” using key questions, follow-up questions and probing questions (Rubin & Rubin, 2005, p. 79). I developed a number of key questions to guide these elite interviews. These are presented in Appendix D.

Harvey (2011), Morris (2009) and Rice (2010) provided useful guidance for conducting elite interviews given the uneven power relationship between elites and interviewers, and the

challenge associated with gaining access to these elites. These included building good rapport, projecting a positive impression and being transparent, adjusting ones style to make the elite as comfortable as possible (Harvey, 2011). As a senior public officer, I worked or interacted with most of these public officers over the past seven years. They were easily accessible therefore; and readily agreed to be interviewed and to have them recorded. I invited respondents to review the interview questionnaires beforehand and to raise any questions they might have had. Interviews lasted at least thirty minutes and were conducted at times and in places convenient to interviewees. All were conducted in their offices.

I interviewed nine elite or senior public officers within those three Ministries. Table 5 lists these officers and their respective Ministries/Agencies. Two officers were from the Ministry of Finance; three from the Ministry of Education and four from the Ministry of Public Works.

**Table 6.** List of Elite Officers Interviewed

<b>Ministries/Agencies</b>	<b>Elite or Senior Public Officer interviewed</b>
<b>Ministry of Finance</b>	Financial Secretary
	Budget Controller
<b>Ministry of Education</b>	Permanent Secretary
	Chief Education Officer
	Senior Executive Officer /Accounting
<b>Ministry of Public Works</b>	Chief Technical Officer
	Chief Engineer
	Chief Architect
	Building Maintenance Officer

I selected these agencies and elites because of the primary roles they played in managing low-intensity hurricanes in Dominica and because they were involved in the formulation and implementation of related policies and plans. Primarily, the Ministry of Finance was responsible a) emergency funding and b) disaster contingency funding. The Ministry of Public Works was

responsible for a) providing emergency transport Services, b) evacuation; c) damage assessment and data gathering; c) demolition of unsafe buildings; and d) road and gutter clearances. The Ministry of Education had support roles that included a) response readiness and plan implementation; b) public information and education; c) public service announcements; d) emergency shelters; d) damage assessment; and e) evacuation.

Interview questions for these elite officers included: What they did? How they worked within and across agencies? How they assessed impacts? What were the resources available for addressing emergencies and education during low intensity hurricanes, and how these resources got to affected areas? Appendix B is the interview schedule.

I also interviewed eleven principals from nine LIH-affected schools to analyze their experiences and perspectives on education during chronic, low-intensity hurricanes. Appendix B shows the interview schedule. Two schools changed principals during the inter-hurricane period. I interviewed both as each experienced one of the low-intensity hurricanes analyzed in this study. Table 6 lists the schools from which these eleven principals were interviewed and the hurricanes they experienced.

**Table 7.** List of School from which Principals were Interviewed

<b>Hurricanes</b>	<b>Schools</b>
<b>Hurricane Dean (2007)</b>	Campbell Primary
	Isaiah Thomas Secondary
	Mahaut Primary
	Salisbury Primary
	Soufriere Primary
	Vieille Case Primary
	Wills Strathmore Steven Secondary
<b>Hurricane Ophelia (2011)</b>	Campbell Primary

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TABLE 7 (Continued)

Mahaut Primary

Kaleb J. Laurent Primary

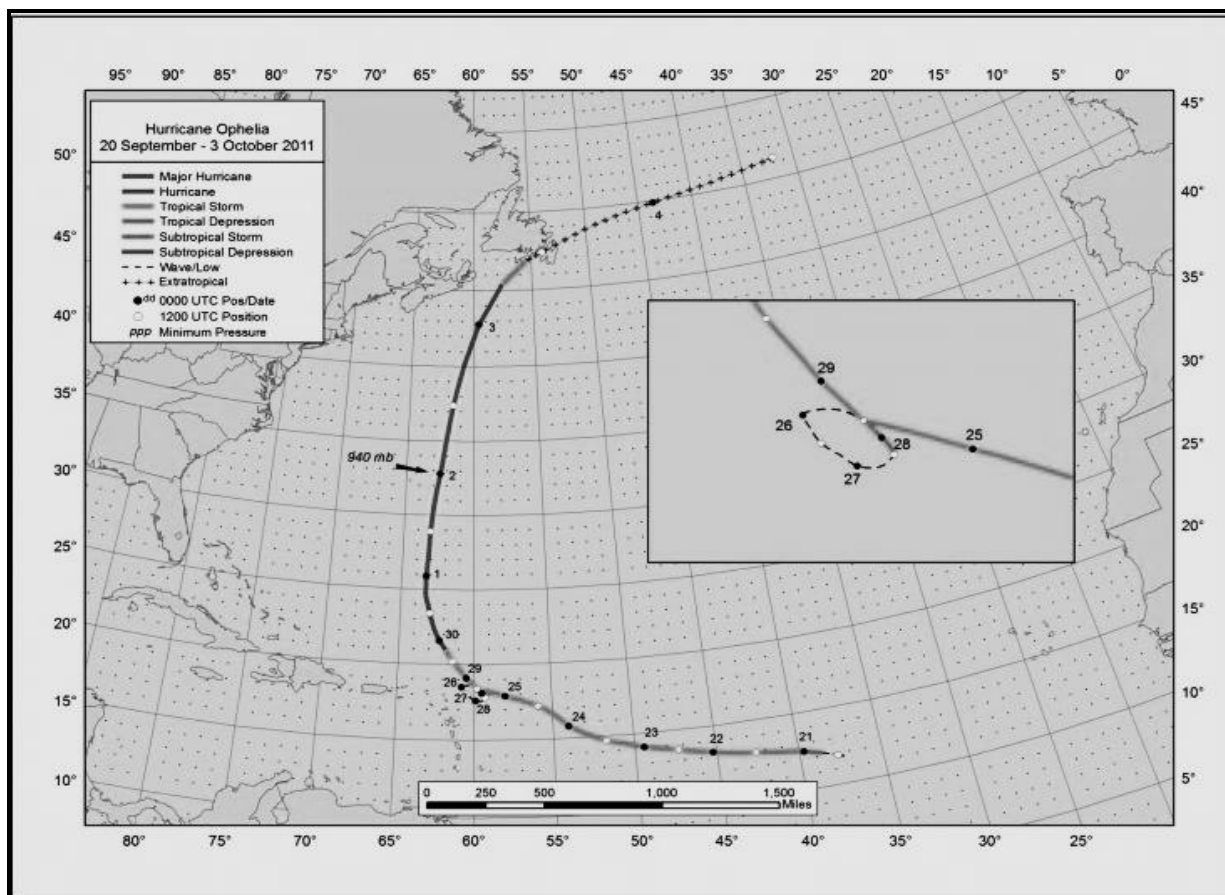
Isaiah Thomas Secondary

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Principals were asked about their experiences and perspectives on education during two LIH – Hurricane Dean (17 August 2007) and Hurricane Ophelia (28 September 2011). These experiences included the extent of damages their schools sustained, the guidance and support received, and the actions taken just prior to and in the aftermath of these two LIH and who took them.

Hurricane Ophelia occurred while schools were in sessions. Figure 9 shows its path and its proximity to Dominica. The arrow locates Dominica and the inset shows the dissipation and reformation of Hurricane Ophelia.





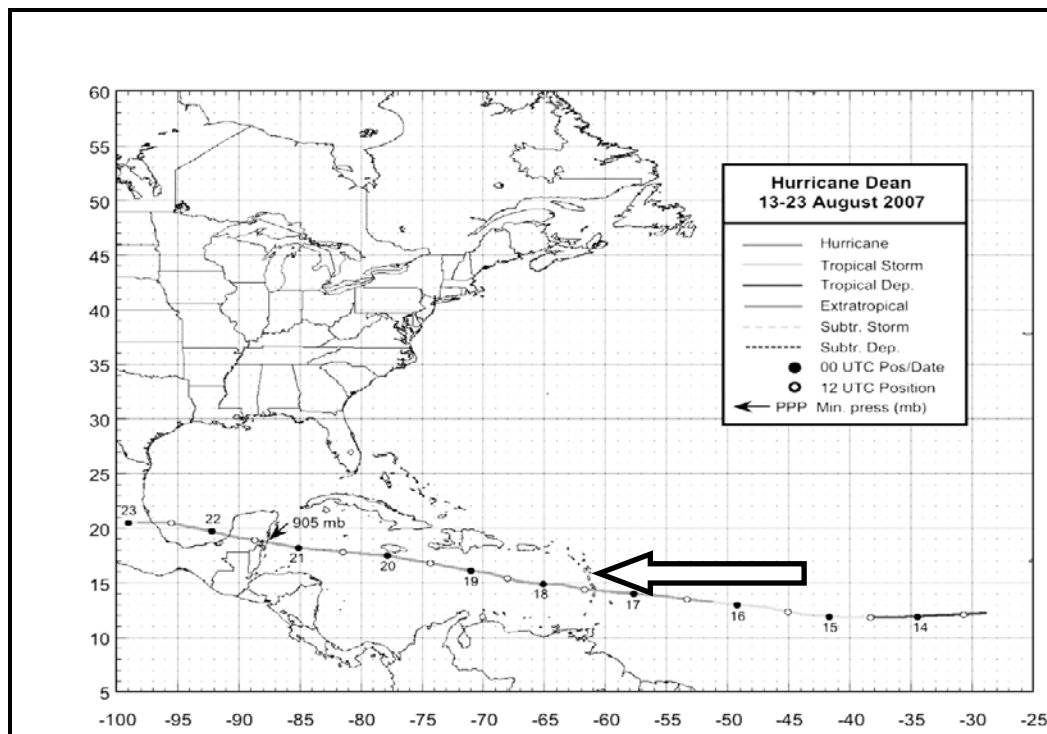
Source: Cangailsoi, 2011: [http://www.nhc.noaa.gov/data/tcr/AL162011\\_Ophelia.pdf](http://www.nhc.noaa.gov/data/tcr/AL162011_Ophelia.pdf)

**Figure 9.** Path of Hurricane Ophelia and its Proximity to Dominica

On 28 September 2011, the center of Hurricane Ophelia was located roughly 360 km northeast of Dominica. Located 250 miles Ophelia's center, Dominica was well within its tropical storm range and effects. A hurricane watch issued on 27 September 2011, however, had been discontinued. Unexpectedly, therefore, Hurricane Ophelia generated heavy and persistent rain that resulted in extensive flooding, damages to roads, homes, related infrastructure, and affected schools along the West Coast (International Monetary Fund, 2012). More than 80 millimeters of rain fell in six hours (IFRC, 2011). Total damages were estimated at \$32 million or 6.5% of GDP (IMF, 2012). Hurricane Ophelia provided rich data on how an unanticipated

low-intensity hurricane was handled while schools were in session. It provided the opportunity to assess the hurricane preparedness of school administrators and their schools.

Hurricane Dean, on the other hand, occurred during summer vacation on 17 August 2007, three weeks before the reopening of school. Its center was located south of Dominica at the time. Figure 10 shows its trajectory and proximity to Dominica (the arrow locates Dominica). Hurricane Dean was a Category 1 hurricane on the Saffir Simpson Scale and brought gale force winds and heavy rains to Dominica. There were two fatalities as a result and over \$60 million (EC\$162 million) in damages (UNDP, ECLAC & IICA, 2007). Hurricane Dean provided the opportunity to assess government's response in addressing damages losses and disruptions schools sustained just before the new school year commenced.



Source: Franklin, 2008: [http://www.nhc.noaa.gov/pdf/TCR-AL042007\\_Dean.pdf](http://www.nhc.noaa.gov/pdf/TCR-AL042007_Dean.pdf)

**Figure 10.** Trajectory of Hurricane Dean and its Proximity to Dominica, 2007

Hurricane Dean damaged twelve schools. These schools are shown in Table 6. I interviewed seven principals. Five principals were unavailable because one passed away, three retired, and the other migrated. Ophelia, on the other hand, affected five schools: These are also shown in Table 3. I interviewed four principals. One principal retired and was unavailable for an interview.

Affected school buildings were inspected to document adherence to building standards and codes in their construction and repairs, and to assess their vulnerabilities to hurricanes. Section 1.3.3 describes these inspections.

### **3.3.3 Inspections**

Building features and structures that conform to standards and codes constitute partial protection against damages and destruction during emergency events. These include walls to column ties<sup>23</sup> and other hurricane ties that fasten roof members to each other. With the assistance of the Ministry of Education's Building Maintenance Officer, I developed a guide for collecting inspection data. Appendix C is a copy of this guide or inspection form. This guide focused on the relative location of school buildings and facilities, the conditions of their walls, windows and roofs, and type of construction materials. I assessed the vulnerability of these buildings and facilities to floods, landslides and sea surges. I also observed the presence or absence of hurricane ties. These observations were recorded on these inspections forms. I also photographed evidence of these key hurricane protective features.

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<sup>23</sup> Ties are metal plates and features that fasten building features or members, like roofs and walls to strength their resistance to hurricane force winds particularly where there are cleavages between these members as between a rafters and purlins in a roof.

My skills and personal experiences in research and data collection as a former policy analyst and Senior Planning Officer in Dominica enhanced the quality of data collection, analysis and interpretation. I acquired the necessary data collection skills from my conduct of supervised research and policy evaluations. I also acquired expertise in field methods from my work in policy research and evaluation in Dominica and during my Ph.D. coursework in disciplined inquiry, education and program evaluation and survey methods. I screened official documents carefully to ensure they were relevant to this study before conducting detailed analyses. I conducted all interviews to ensure consistency in focus and tone. I explained the purpose and relevance of this study to respondents and developed good rapport with them. Consequently, they spoke freely and openly during their interviews.

I systematically inspected affected buildings and recorded observations. Field notes of activities, decisions and experiences during interviews constituted part of my data collection strategy, analysis and presentation. Section 3.2 describes this data analysis procedures and presentation.

### **3.4 DATA ANALYSIS AND PRESENTATION**

Initially, four propositions were developed at the end of the literature review to guide this study.

These were:

1. Because low-intensity hurricanes are recurrent, Dominica has in a place explicit policies and structures that anticipate and guide action for chronic low-intensity, education emergencies.

2. The Government of the Commonwealth of Dominica has adequate financial resources to address chronic low-intensity, education emergencies.
3. The education sector in Dominica receives top funding priority during chronic low-intensity, emergencies.
4. Services delivery for chronic low-intensity, education emergencies in Dominica are timely and efficient

As data collection and analysis proceeded, however, these propositions seemed incongruent with the qualitative nature of this study. Propositions are theoretical orientations or study guides developed out of a large body of research (Yin, 2009). Initial propositions were based on catastrophic disasters research making them inapplicable for guiding research on low-intensity hurricanes. With limited research on education and low intensity hurricanes, developing relevant, robust and meaningful propositions became problematic. As an alternative, I opted for identifying themes inductively because qualitative data is more amenable to thematic data analysis.

Data analysis is “a systematic search for meaning...a way to process qualitative data so that what has been learnt can be communicated to others” (Hatch, 2002, p. 148). It is organizing and interrogating data in ways that allow for “seeing patterns, identifying themes, discovering relationships, developing explanations, making interpretations, mounting critiques or generating theories” (Hatch, 2002, p. 148).

As an analytical strategy, I used thematic analysis, explanation building and descriptive statistics (Yin, 2004, 2009) to describe and explain how Dominica’s government addressed

education during low-intensity hurricanes. Appendix E is a summary of these three analytical strategies.

Thematic analysis is a process of encoding qualitative information using themes. A theme is “a pattern found in the information that at the minimum describes and organizes possible observation or at the maximum interprets aspects of the phenomenon” (Boyatzis, 1998, p. iv). Themes could be semantic (explicit) or latent (interpretive). Semantic themes are identified within the explicit or surface meaning of data but nothing beyond what respondents say or what was written (Braun & Clarke, 2006). Latent themes go beyond semantics and begin to identify or examine underlying ideas, assumptions and conceptualizations that shape and inform the semantic content of the data (Braun & Clarke, 2006). The use of simple quotes to support or refute themes is semantic. Drawing meaning and analyzing these quotes as they relate to the research in question constitute latent themes. Document themes, for example, were analyzed to determine and explain Dominica’s government’s roles and responsibilities in managing education during low intensity hurricanes.

Explanation building identified causal links that helped to explain a case, that is, the how and whys of that case (Yin, 2004). Such an approach was seen as likely to cause the researcher to wander away from the focus of the research (Yin, 2004). Identifying themes consistent with study objectives reduced the likelihood of this deviation. Descriptive statistics further enhanced, supported or refuted data during the analysis.

Descriptive statistics, like range, percentages, averages, deficits and surpluses were used to analyze trends in national budget, the education budget, the school plant maintenance and repairs budgets. These were essential for verifying information or data that emerged from the literature, interviews and official documents. While elite officers in education, for example,

consistently highlighted the inadequacy of funds to address education during LIH, data showed that between 2004 and 2010, with the exception of three years, Dominica had annual budget surpluses of between \$800,000 and \$4 million. It showed the difference between perception and reality.

I used tables, photographs, graphs, maps and thematic models to present inspection, interview and document data and information.

### **3.4.1 Official documents**

Data from ten official documents were subject to thematic analysis. All ten documents were in PDF format and uploaded into NVIVO 9 software. NVIVO 9 is a Computer Assisted Qualitative Data Analysis Software (CAQDAS). Like all CAQDAS, it not primarily a data analysis software, but facilitates the collation, organization and presentation of qualitative data for interpretation and analysis particularly through coding or themes (Rademaker, Grace, & Curda, 2012). Analysis remains the responsibility of the researcher (op cit). Themes have to be determined manually but NVIVO will allow for the collection of materials related to a theme into a single container called a node. Once themes have been organised into containers, NVIVO can also produce thematic models or word similarity linkages to show the relationships among coded themes in a text or material.

Key word-themes or nodes associated with disasters, emergencies or education in emergencies were identified in these documents. Following from the preliminary word search, I used disaster and emergency-related words like “vulnerability” and “risks” as initial nodes. As I read and re-read the material, new nodes, like “capacity improvements,” embedded in documents

also became themes. Through this process of re-reading, adjusting, re-working and recoding a total of three key or parent nodes or themes emerged, each consisting of a hierarchy of child and parent nodes (see Figure 2). Child nodes are related sub-themes that I categorized into themes or parent nodes. These three parent nodes were a) vulnerability and risk reduction, b) disaster and emergency funding; and c) capacity improvement. The resulting thematic networks or models were analyzed as whether they focused on pre-emergency or post-emergency activities or both. Descriptive and explanatory accounts linked policies, impacts and responses.

Descriptive statistics were used to analyze education budget allocations, school maintenance and contract budget data collected from Annual Budget estimates documents. These documents became essential context builders for interview analyses.

### **3.4.2 Interviews**

This study was awarded exempt status since it did not include respondents who were considered protected human subjects, like children under 18 years, under the University of Pittsburgh's Institutional Review Board (IRB) Regulations. In accordance with these regulations written consent was not required since respondents were also public officials. I made direct contact with respondents to obtain oral consent for participation in this study, and explained the study objectives to each respondent. I assured each that their information would be treated with the confidentiality outlined in the University of Pittsburgh IRB protocols for handling post-interview data and information. Interviews were conducted over a school year and audio-recorded with respondents' permission.



I uploaded all interviews from the audio recorder directly into a personal computer and transcribed them into Microsoft Word Professional Suite. These transcriptions followed the interview schedule question and response format for ease of data collation and analyses (See Yin, 2009). Similar questions were posed to respondents based on categories to facilitate data coding and analyses in NVIVO 9. Senior Public Officers and principals as a category, for example, had similar questions posed to them. This approach increased chances for effective thematic analysis and validation across interviews (Yin, 2004).

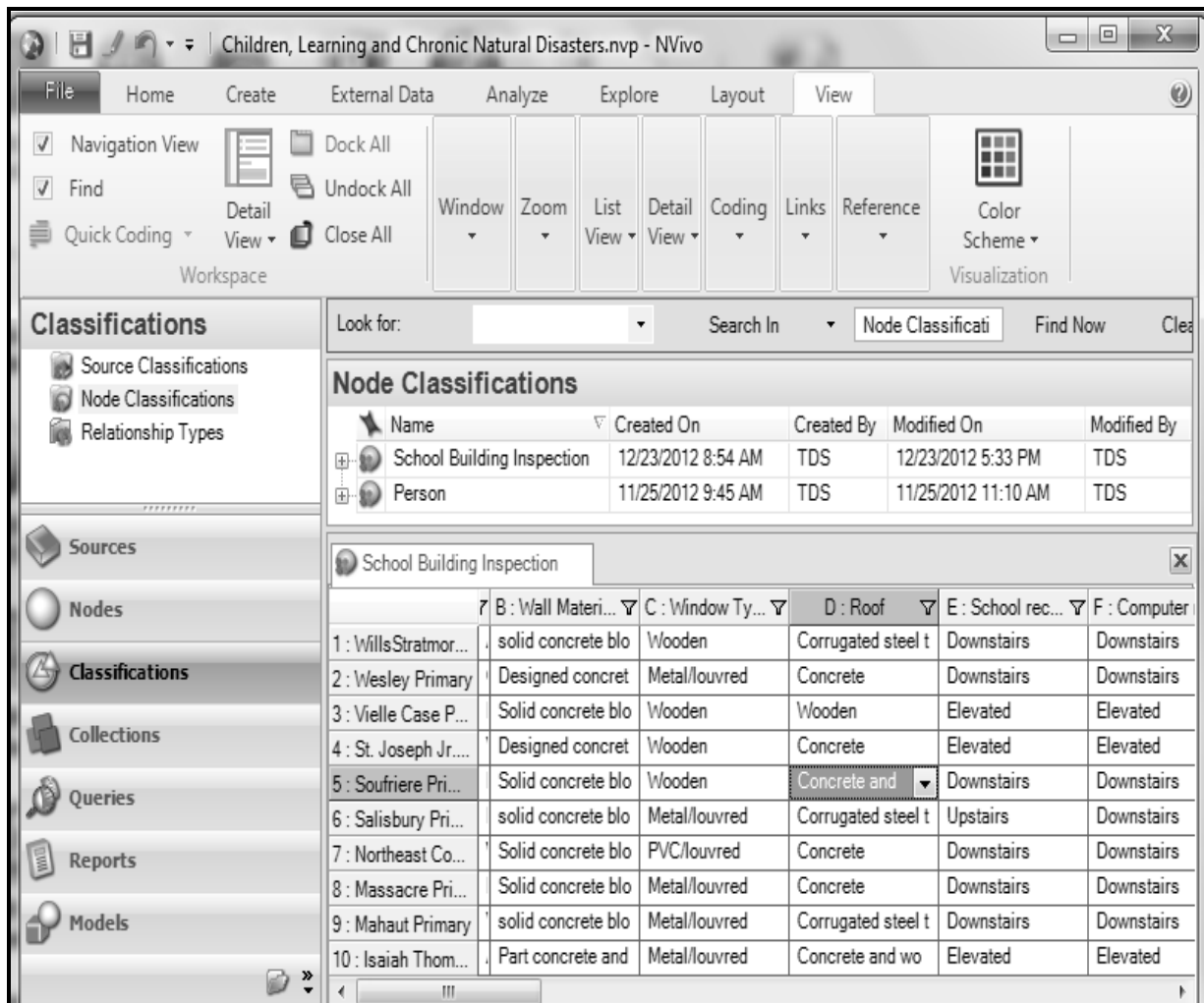
I read each transcript through to ensure I was familiar with the data. I coded interview materials using key words from the interview questions as nodes. I re-read and refined coded materials as new themes emerged. The result was a hierarchy of nodes called tree nodes consisting of parent nodes (theme) and their child nodes (sub-themes) (cite this terminology). I coded, for example, the word “priority” and gathered under this node all interview references to priority (theme). These nodes were further divided into child nodes (sub-themes) such as “What was priority,” “What was considered in establishing priorities.” Safety, health and safety became sub-themes As new materials emerged, themes were adjusted, re-worked and re-coded and changed resulting in three major or parent interview themes: a) hurricanes had adverse impacts on education and limited policy responses; b) inadequate financing to address education during LIH; and c) education is deprioritized during LIH.

Using nodes or themes, I developed thematic networks or NVIVO models of interview data to depict hierarchies, manifest and latent themes and synergies among respondents. Like documents, interviews were modeled using word similarity tools in NVIVO 9 to determine thematic congruity among interviews. Building inspection data was also analyzed in NVIVO.

### **3.4.3 Building inspections**

In the ten schools I inspected, I recorded the presence or absence of features that complied with building standards and codes. I also assessed the location of affected schools, their facilities and their vulnerabilities to hurricane risks. This data was uploaded into NVIVO 9 as a Node Classification called School building inspection, and analyzed using descriptive statistics and presented as tables, graphs and charts.

Node Classifications are NVIVO spreadsheets for collecting, analyzing and presenting variable and attribute data. Figure 11 is a photo of NVIVO window of the Node Classification for inspection data for ten schools. Each column is a variable containing attribute data for each of the ten schools I inspected. Column A was minimized to protect the identities of the principals whose schools I inspected.



**Figure 11.** School Building Inspection NVIVO Node Classification Window, Dominica

I photographed key observations I made including breaches in building standards and codes. Data from inspection were cross-referenced with interviews from public work officers who were responsible for post-hurricane or disaster damage assessment, and recovery. I highlighted gaps between what should be and what was, and discussed their implications for vulnerabilities to LIH.

Overall, in analyzing this study data, I paid particular attention to the contexts in which these nodes or themes were embedded to understand the policy stances and their implications for

addressing low-intensity hurricanes. The terms “vulnerability and risk reduction,” for example, appeared in the Medium Term Growth and Social Protection Strategy, 2006 & 2012 -2014 documents. These are ex-ante or pre-hurricane terms. When read in context, however, much of the approach to low-intensity hurricanes appeared to focus on ex-post activities of response and recovery rather than ex-ante. Ex-ante activities are pre-hurricane and focus on mitigation, preparedness and include vulnerability and risk reduction.

### **3.5 BIASES AND LIMITATIONS**

As Dominica’s Senior Planning Officer, I brought experiences and biases that may have influenced my data interpretation and explanation. Hurricanes Dean and Ophelia, for example, may have left unresolved issues associated with unnecessary delays in rehabilitation works. My experience with Hurricane David as a senior high school student in August 1979 may have resulted in additional biases. My home, textbooks were damaged. There was a four-month disruption at my school. During that period it was used as an emergency shelter. My academic performance declined dramatically. I performed poorly on graduation examinations<sup>24</sup>. These may have influenced my probes and data interpretation, including case selection.

Since research in education during low-intensity hurricane is relatively new, establishing a rich database became essential. An in-depth case study provided that rich data and the foundation for future related studies. I focused on the Eastern Caribbean, particularly Dominica

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<sup>24</sup> In Dominica, special examinations different from exit exams were administered in 1979 for graduation. I performed creditably on the exit examinations, though not as well as expected. I flunked graduation exams.

because I had access to that rich data and because the experiences were not too unlike others in the region, the Pacific and Indian Ocean. Resources to expand this research study, however, were limited.

This study was designed to address and offer recommendation to better address a chronic policy problem. Aware of potential biases and limitations, I committed to reducing them and to improve the validity and reliability of the findings using, for example, mixed methods, quotes and triangulation of documentary, interviews and observation data. My interpretation therefore, was based on my understanding of the data and information I collected, and their analyses, my experience and the literature.

### **3.6 INTERPRETATION OF DATA**

Limited policy research and literature on education and low-intensity hurricanes exists. Consequently, I relied on my first-hand experience with low-intensity hurricanes in Dominica and the broader literature on education in emergencies to make sense of the data. Much of that literature, however, has focused on conflict-based emergencies, mostly in fragile states like Somalia (2009), and Rwanda (1998). They focused as well on the severe effects of catastrophic events on education systems, like Haiti (2010), New Orleans, Louisiana (2005).

Little attention has been paid to LIH because often they are localized. They do not attract media attention or that of the international humanitarian community. Their impacts and responses were invisible to public scrutiny.

I relied as well on the broader disasters and emergencies literature to carve out the theoretical groundings for my interpretations of education during low-intensity hurricanes in their Dominican context.

I based my interpretations on Dombrowsky's notion of disasters as "the collapse of social and cultural protections" (Dombrowsky, 1981). Like Dombrowsky, I accepted the distinction between disaster events or triggers and the disasters themselves, in this case, the difference between the LIH itself (the trigger) and its destructions and disruptions (the disasters or emergency). I believed that protection from destructions and disruptions is a human responsibility and that disaster-relevant policies, strategies, institutional capacities and their implementation are critical elements of that protection. Public managers and decision-makers were responsible, therefore, to ensure protection from disasters. I concurred, as well, with the position of Rosenthal, Boin & Comfort (2001).

Rosenthal, Boin & Comfort (2001) described disasters and emergencies as "managerial and administrative failures." This involved failure to adopt policies, make decisions to reduce disasters and manage events before they escalate into emergencies which resulted in the collapse of protections. Pigozzi's (1999) however, believed "decentralizing of children" away from the education focus was the central problem in education in emergencies.

I used Pigozzi's (1999) Developmental Approach to frame my perspective on education in emergencies. As a mitigation and protective measure, this approach placed children at the center of conflict-based education in emergencies. An equitable, peace-based education would make children catalysts against conflict-based emergencies. Its transformative stance, however, did not address chronic, low-intensity hurricanes.

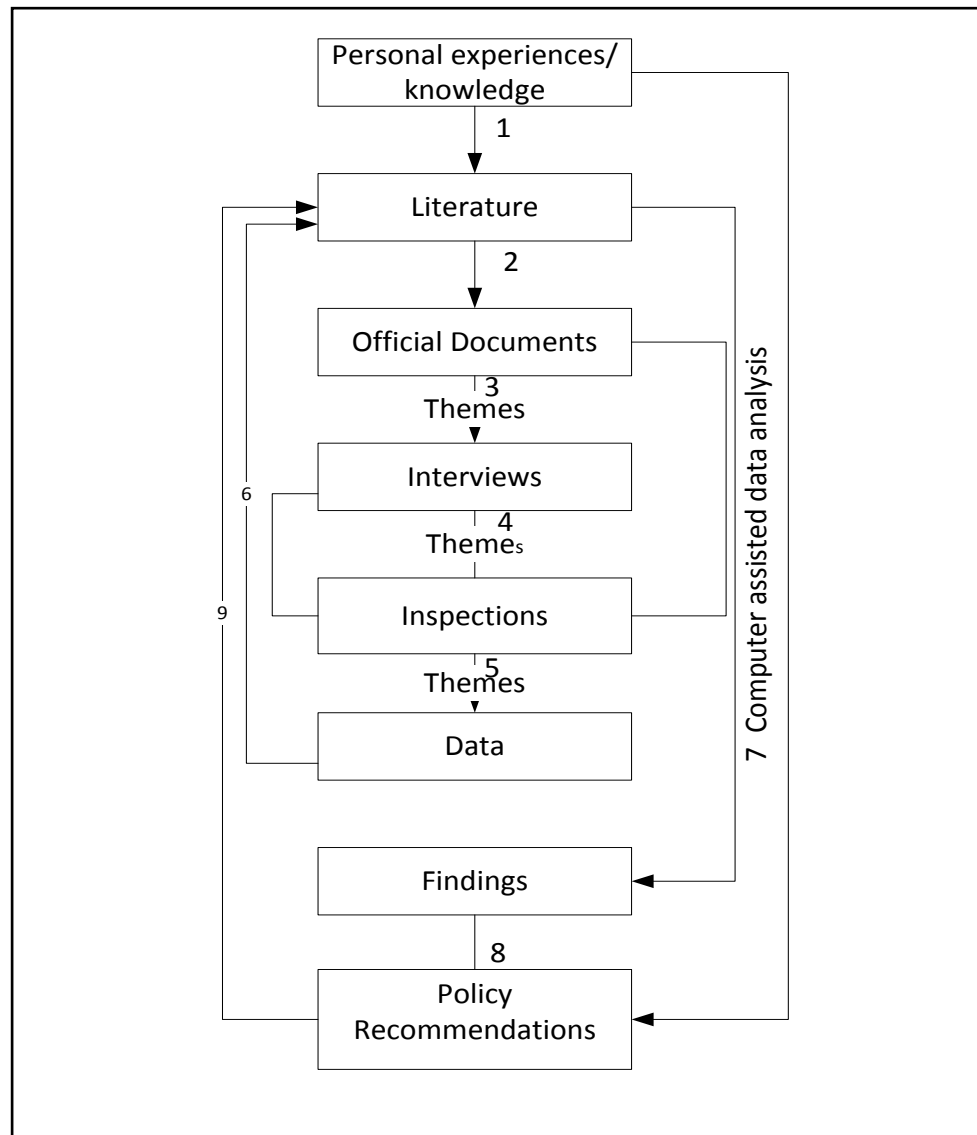
This investigation adapted Pigozzi's Approach into the Adapted Developmental Approach. This new approach placed child protection at the center of education policy, development, planning and implementation in adapting to a context of chronic, LIH and to reduce their vulnerabilities and risks to low-intensity hurricanes. This adapted developmental approach would also improve financial and institutional capacities for addressing effectively the complex and dynamic nature of education during LIH. Adaptation is grounded in the work of Comfort (2007).

Comfort (1999) argued for adaptive response systems in sudden and rapidly- evolving or dynamic events like earthquakes and catastrophic hurricanes. She focused on the dynamics of post-disaster response and recovery and adaptations in effective response to catastrophic and dynamic events, like earthquakes. Low-intensity hurricanes, however, are slow and predictable, leaving ample adjustments and preparation time before they interact with existing protections. They are chronic and may require greater focus on pre-disaster activities or adaptations that anticipate and incorporate them into public policies, plans and operations. This would constitute the ex-ante policy shift that called for assistance before disasters occur (see Comfort, et al, 1999).

These ex-ante adaptations are important because of the economic and financial challenges Dominica face as a small island developing states. This study will show that it is the perception that Dominica lacked the financial resources to sustainably address low-intensity hurricanes (see Section 2.8: Theme 5).

Ground in pragmatism, this study sought to use the data collected to a) identify government behaviors (lines of action); b) identify the assertions associated with these behaviors (warranted assertions); and c) the consequences that are likely to follow from these or other

behaviors(workability) (Mertens, 2005). Figure 5 outlines the interpretive process based on the research process just outlined.



**Figure 12.** Research Development Process

The ten documents reviewed in this study were selected from the population of possible official documents containing key disaster emergency words and terms. Those that contained these key



terms were subject to inductive thematic analysis to decipher their policy foci. Interviews with elite or senior public officers and school principals followed.

The interviews conducted with nine elite officers and eleven principals sought to broaden understanding of and assertions embedded in documented policies and approaches to address education during low-intensity hurricanes in Dominica. It sought to assess performance on response, recovery as well actions taken for averting future emergencies. Schools buildings were inspected to assess performance.

Inspection of ten school buildings provided disaster mitigation data on hurricane protective features installed ex-post. Many protective features like hurricane ties were not installed. School roofs, in particular, were vulnerable and at risk for hurricane damage. Moreover, schools were located in areas vulnerable to landslides and flooding from nearby rivers.

These findings were organized into themes or nodes identified under each data collection strategy – document reviews, elite interviews, interviews with principals and inspections. Ten themes or nodes emerged: Three document review themes, three elite themes, three principals' themes and one building inspection theme respectively. These themes were: 1). Vulnerability and risk reduction policy; 2). Proposed policy for establishing vulnerability and contingency funds; 3 Improve capacities; 4). Adverse impacts on education and limited policy responses; 5). Inadequate financing to address education in emergencies; 6). Education is deprioritized during emergencies; 7). Damaging impacts on schools; 8). Multiple actors; 9). Mitigation strategies; 10) Post-emergency vulnerability and risks persist.

As I explored themes in the findings chapter, I used material coded in NVIVO 9 under each for substantiation, refutation or contradiction. Under the “vulnerability and risk reduction”

theme, for example, I cut and pasted material directly from documents nodes in NVIVO 9 where they coded to affirm my arguments. I dissected these quotes to reveal their policy themes and, therefore, the lines of action, warranted assertions and their workability. Even though, for example, “vulnerability and risk reduction” appeared to be the asserted approach to disaster and emergency policies in Dominica, latent thematic analysis showed actions were more in line with response and recovery. The results were reactive strategies that did not pre-empt hurricanes but increased costs and indebtedness, demonstrated a lack of financial preparation and the absence of plans and contingencies. Similar approaches were taken using quotes from interviews, excerpts and charts from documents, and charts or photographs from inspections.

“The researcher’s personal experiences and insights are an integral part of the inquiry and critical to understanding the phenomenon” in qualitative analysis (Patton, 2002, p. 40). As a participant-researcher, I included my personal experiences to substantiate or refute data claims. I was personally aware, for example, that responsibilities for education during LIH had not been assigned to any officer or unit with the Ministry of Education, neither were they contained in any policies or plans. Where I probed interviewers for clarification on responses, in this manuscript, I italicized those probes to document my involvement as a participant in this study. Finally, I explored the literature as well to better describe contexts, make meaning of themes, provide rival explanations and highlight contradictions as they surfaced in the findings which follow.

## **4.0 FINDINGS**

This chapter presents my findings on how the government of the Commonwealth of Dominica addressed education during chronic low-intensity hurricanes. These findings have been organized into the four data collection categories. Each category has been organized into themes identified inductively using NVIVO 9 and listed in the previous paragraph. They present a picture of the problem, lines of action, beliefs behind those actions and their consequences. I described each theme to outline the perspectives under each data collection strategy. The findings and results in this chapter address the topic question, “How does the Government of the Commonwealth of Dominica address education during chronic, low-intensity hurricanes?” Table 7 provides a summary of organizing themes in this study.

**Table 8.** Summary of Emergent Themes

<b>Data Collection Methods</b>	<b>Data Analysis Methods</b>	<b>Objective</b>	<b>Evidence</b>	<b>Emergent themes</b>
<b>Review of official documents</b>	Thematic analysis using NVIVO 9	To identify documented policy statements and positions using key words and themes	<ul style="list-style-type: none"> <li>• GSPS 2006</li> <li>• GSPS, 2012-2014</li> </ul>	<b>Theme 1:</b> Vulnerability & Risk Reduction Policy
	Explanation building		<ul style="list-style-type: none"> <li>• GSPS 2006,</li> <li>• GSPS, 2012- 2014</li> </ul>	<b>Theme 2:</b> Proposed policy for establishing Vulnerability& Contingency funds
			<ul style="list-style-type: none"> <li>• GSPS, 2006</li> <li>• GSPS, 2012-2014</li> <li>• NDP, 2001</li> <li>• Government Information Service, 2012</li> </ul>	<b>Theme 3:</b> Improve Capacities
<b>Elite interviews</b>	Thematic analysis using NVIVO 9	To identify policy perspectives, roles and responsibilities of senior public officers in addressing low intensity education in emergencies using emergent themes	<ul style="list-style-type: none"> <li>• Elite Interviews: RE, KJ, EL, FP, EC, &amp; RR,</li> </ul>	<b>Theme 4:</b> Adverse impacts on education and limited policy responses
	Descriptive Statistics Trend analysis		<ul style="list-style-type: none"> <li>• Budget estimates, 2004 – 2012</li> <li>• School Plant Maintenance Budget,</li> <li>• Elite Interviews: RE, KJ, EL, FP, EC, &amp; RR,</li> </ul>	<b>Theme 5:</b> External financing to address education in emergencies
			<ul style="list-style-type: none"> <li>• Elite interviews: RE &amp; KJ</li> <li>• SH &amp; MP</li> </ul>	<b>Theme 6:</b> Education is deprioritized during education in emergencies
<b>Interviews with principals</b>	Thematic analysis using NVIVO 9	To assess principals experiences and perspectives associated with two low-intensity Hurricanes: Dean (2007) & Ophelia (2011) using emergent themes	<ul style="list-style-type: none"> <li>• All Principals</li> </ul>	<b>Theme 7:</b> Damaging impacts on schools
	Explanation building		<ul style="list-style-type: none"> <li>• Principals <ul style="list-style-type: none"> <li>• AA</li> <li>• JB</li> <li>• VP</li> <li>• VR</li> </ul> </li> </ul>	<b>Theme 8:</b> Multiple actors
			<ul style="list-style-type: none"> <li>• Principals <ul style="list-style-type: none"> <li>• VR</li> <li>• JM</li> <li>• JB</li> </ul> </li> </ul>	<b>Theme 9:</b> Mitigation strategies

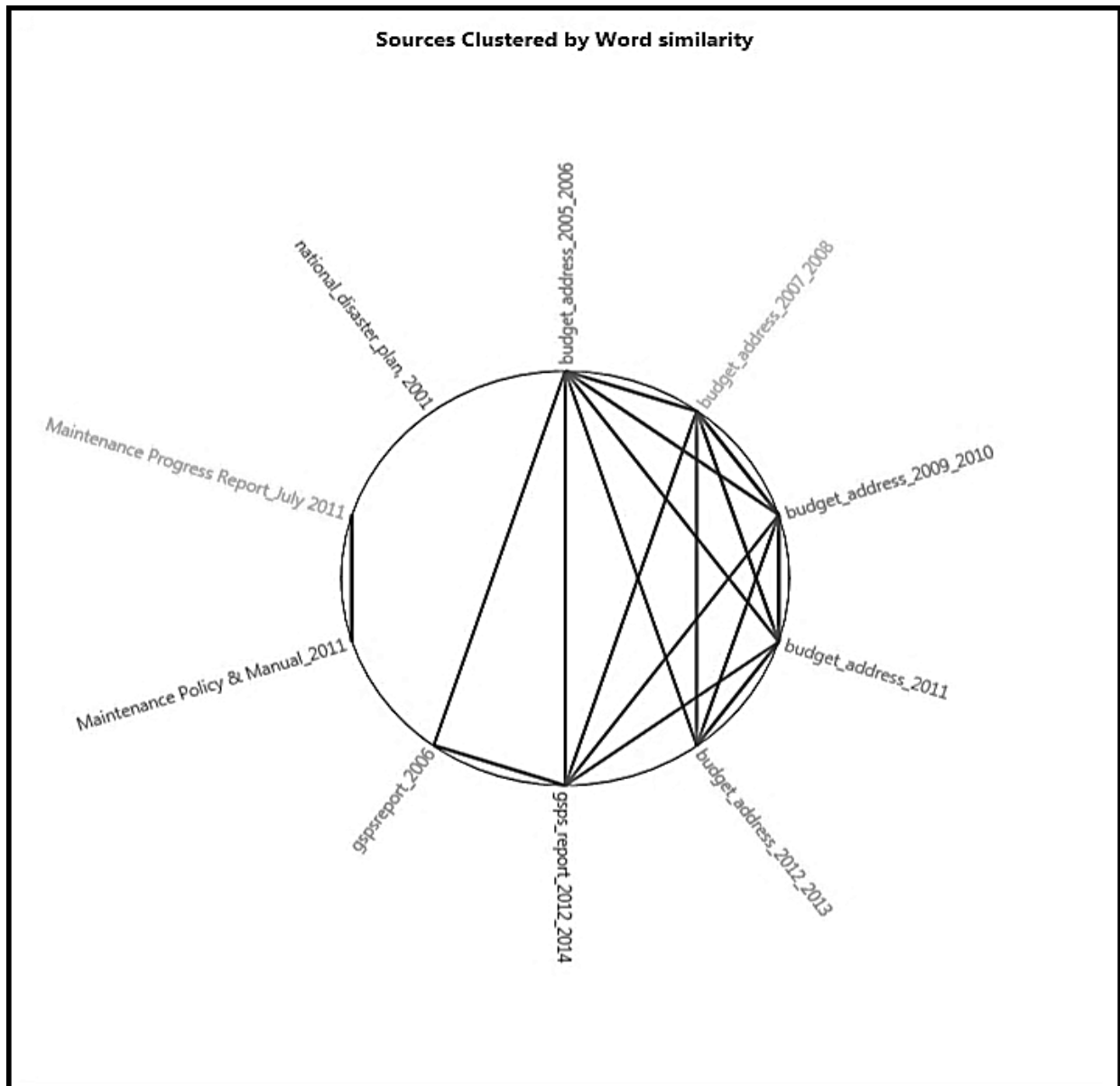
<b>TABLE 8 (continued)</b>  <b>School building inspections</b>	Node classification in NVIVO 9  Explanation building  Descriptive statistics Trend data	To assess the vulnerability schools, facilities and adherence to building codes and standard in repairs and rehabilitation of school buildings	<ul style="list-style-type: none"> <li>• 6 schools had no purlin to rafter ties</li> <li>• 10 schools &lt;300ft from ocean</li> <li>• 5 schools &lt; 100ft from ocean</li> <li>• 5 schools within 5ft of cliffs</li> <li>• 8 school had records located downstairs/ elevated downstairs</li> <li>• 10 libraries and 9 computer room located downstairs or elevated downstairs</li> </ul>	<b>Theme: 10:</b> Risk and vulnerabilities persists
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I presented documents reviews as one set of three themes; interviews as two sets of themes: three elite themes and three principals' themes. Finally, I presented building inspections as one theme. Section 4.1 deals with the document themes.

## 4.1 DOCUMENT REVIEWS

National laws and policies are essential for planning and guiding education continuity during disasters or emergencies (INEE, 2010). Those laws and policies reveal intent but also assertions. It was important therefore, to assess the extent to which official documents contained such laws and policies to guide action and reveal policymakers assertions. Key word similarity analysis of these official documents revealed thematic consistency. Thematic consistency was a requisite for further analysis. Figure 13 shows the resulting network. The lines indicate the

extent to which documents contained cross-cutting themes. The more intense the network, that is, the higher the line densities the greater the thematic congruence.

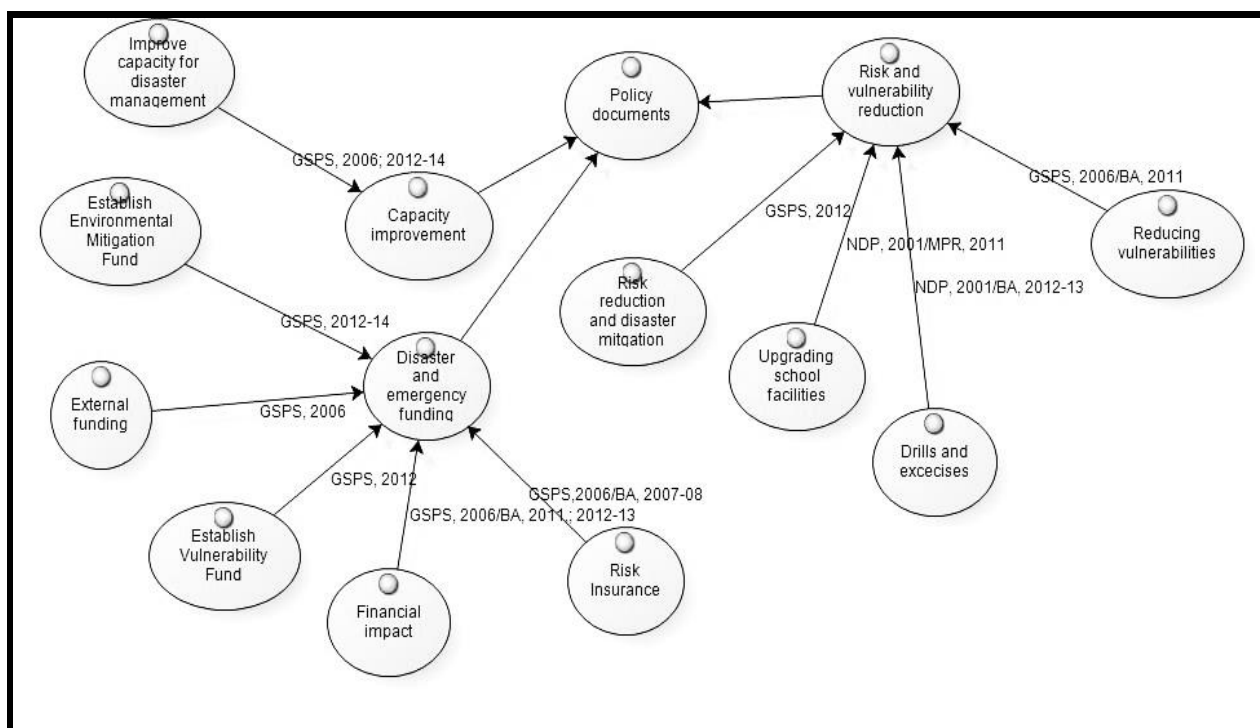


**Figure 13.** Official Documents Clustered by Word Similarity, Dominica

With the exception of the National Disaster Plan, 2001; the Maintenance Policy and Manual and Maintenance Progress Reports, all other documents shared similar words, terms or their derivatives. The National Disaster Plan, 2001 was a dated plan document and its vernacular would have been incongruent with more recent documents like the Budget Addresses 2005 – 2013, for example. The School Maintenance and Policy Manual documents were consultancy reports. As expected they possessed similar words and terms because they reported on the same activity. Their vernacular, however, seemed dissimilar to other documents I reviewed.

Once similarities were established, documents were then coded by nodes or themes in NVIVO 9 as described in Section 1.4.1. Again, in NVIVO 9, nodes are containers for categories or codes that link rich data into sub-themes and themes (Richards, 1999).

Ten sub-themes or child nodes, shown in Figure 2, emerged from these documents. These were further coded into three parent nodes or themes shown in Figure 2 as well. These parent nodes were “**vulnerability and risk reduction;**” “**disaster and emergency funding**” and “**capacity improvement.**” Child and parent nodes formed a hierarchy of nodes or network depicted in Figure 14 as an NVIVO model. Arrows connected child nodes to parent nodes. Child nodes were labeled as their source document, for example GSPS 2012 – 2014 and NDP, 2001.



**Figure 14.** Disaster-related Policy Themes and Sub-themes Located in Official Documents, Dominica

These themes and their sub-themes or child nodes are shown in Table 9 for easy reference. The rest of this section outlines the key findings under each of these three document themes.

**Table 9.** Categories of Disaster-related Document Themes

<b>Vulnerability and risk reduction</b>	<b>Disaster &amp; Emergency Funding</b>	<b>Capacity Improvement</b>
<b>Reducing vulnerabilities</b>	External funding	Improving capacity for disaster management
<b>Upgrading School facilities</b>	Establish vulnerability fund	
<b>Risk &amp; vulnerability reduction strategies</b>	Establish environmental mitigation fund	
<b>Drills and exercises</b>	Financial impact	
<b>Risk insurance</b>	Risk insurance	



#### 4.1.1 Theme 1: Vulnerability and risk reduction policies

Vulnerability and risk reduction strategies have become key policies for addressing disasters among regional and international financial and development institutions disasters (ADB, 2008; CDB, 2004, INEE, 2010; Mahul & Gurenko, 2006; World Bank, 2006,). These policies are, for example, pre-hurricane strategies and activities designed to mitigate hurricane and disaster impacts. It is estimated that every dollar spent on mitigation, risk and vulnerability reduction results in a seven dollar savings on disaster response and recovery (ADB, 2008).

Policymakers in Dominica seemed well aware of the significance of vulnerability and risk reduction in hurricane and disaster management. Five sub-themes or child nodes related to vulnerability and risk reduction policies appeared in official documents I reviewed. These were 1) reducing vulnerabilities; 2) upgrading school facilities, 3) risk and vulnerability reduction strategy; 4) drills; and 6) exercises and risk insurance. The term “vulnerability” appeared twice.

Terms near in meaning, like “environment enhancements,” were coded as vulnerability and risk reduction. Upgrading school facilities appeared in one document and the conduct of “drills and exercises” appeared in another. Each was coded as it appeared. All of these terms together were coded as vulnerability and risk reduction.

The Medium Term Growth and Social Protection Strategy (GSPS) outlined government’s key policies and positions on vulnerability and risk reduction. The GSPS, 2012-2014 stated for example,

Government will seek to reduce environmental *vulnerability* and improve disaster *prevention* and management, through a combination of *risk reduction*, impact *mitigation* and other measures, including: Effective implementation of the Physical Planning Act and the National Environmental Management Strategy and Action Plan for Dominica.

Four pre-hurricane terms are mentioned here: vulnerability, prevention, risk reduction and mitigation. Government proposed also the establishment of funding facilities for “addressing *vulnerabilities* and undertaking *environmental enhancements* after disasters, as well as *environmental insurance*...which will result in a relatively speeding response to hurricanes and reduce dependence on ad hoc and slow donor and international assistance (GSPS, 2006; GSPS, 2012-14).

Overall, however, vulnerability and risk reduction policies as presented in official documents did not explicitly consider education during low-intensity hurricanes. Rather, these documents focused on disasters in general with no reference made to education or schooling. This generic policy approach to addressing disasters masks the nuances and complexities associated with hurricanes and in particular LIH including funding as reflected in Theme 2: Proposed policies for the establishment of vulnerabilities and contingency funding

#### **4.1.2 Theme 2: Proposed policies for establishing vulnerability and contingency funds**

Funding remains one of the perennial issues in disaster and emergency management, worldwide. This is due to the inadequacy of disaster funding globally, the high financial and economic impacts of disasters and dwindling international humanitarian assistance (Smillie & Minear, 2003; Wathne & Hedger, 2010; World Bank, 2006).

Official documents showed policymakers in Dominica were aware of disaster and emergency funding issues and proposed policies to address them. Five sub-themes or child-nodes with regards to funding emerged: These were; 1) vulnerability and contingency funds, 2) risk insurance; 3) external funding, and 4) risk insurance. Those themes appeared in four

documents as identified in Figure 2. They appeared in the GSPS (2006); and then again in the GSPS in 2012. They appeared in the budget address of 2007 and again in 2011. There seemed to have been a five year gap in the appearance and reappearance of these policies in official documents. These occurred at the around the same time as Hurricanes Dean, 2007 and Hurricane Ophelia, 2012 when attention and conversations about low-intensity hurricanes are heightened. With respect to this proposed vulnerability fund, for example, the Growth and Social Protection Strategy (GSPS) (2006) stated,

For combating environmental *vulnerability*, the Government of the Commonwealth of Dominica will explore, under the aegis of the Barbados Program of Action (BPoA) or the Association of Small Island States (AOSIS), the establishment by the World Bank of a special *vulnerability* fund for SIDS stricken by hurricanes. Other international financial institutions and donor agencies can enhance the fund as part of their contribution to the BPoA. The fund can then seek *environmental insurance* for small islands. This would result in a relatively speedy response to hurricanes and other environmental disasters and reduce dependence on ad hoc and sometimes slow donor and international assistance for this purpose (GSPS, 2006).

This policy tied combating “*environmental vulnerabilities*” and “*environmental insurance*” to funding. Although Dominica proposed this environmental funding, the World Bank would be responsible for its establishment and under the aegis of either the Barbados Program of Action or the Association of Small Island States. Dominica’s role would only be exploratory. The umbrella organization for this fund was still ambivalent. Other international financial institutions and donor agencies would contribute to this fund which would then be used to buy “environmental insurance” for small island states. This of course would mature after disasters or emergencies, and would in effect be a rapid response fund. Unless vulnerability reduction is tied to premiums, insurance coverage would not of itself reduce those (Hoffman & Brukoff, 2006).

This proposed fund would also reduce dependence on “ad hoc and slow international and donor assistance” but by corralling assistance from these very agencies before disasters or hurricanes. In this sense, this would not reduce dependence on external funding. It would simply shift canvassed funds from ex-post, that is response and recovery to ex-ante phases, that is mitigation and preparedness but would still expend them ex-post.

The proposed contingency fund would also be established in part with external funds. In describing this fund, the GSPS (2012-14) stated,

Aside from hurricanes and volcanic eruptions, Dominica is prone to earthquakes, landslides, river floods, and heavy seas that often cause damage to the transportation network and cause environmental degradation. Provision will be made within the public investment program for a *Natural Disaster Contingency fund* to cover the costs of repairs and environmental enhancements necessary after such environmental mishaps. As soon as it is deemed feasible, the Ministry of Finance will set aside five per cent of the Public Sector Investment Project (PSIP)<sup>25</sup> for purposes of starting such a fund and make a similar annual allocation to it. Efforts will be made to supplement the resources of this fund from external sources (GSPS, 2012).

The term “*environmental enhancement*” alludes to mitigation and vulnerability reduction but only after disasters or “*environmental mishaps*.” This contingency fund would be established locally using five percent of the annual estimates of the Public Sector Investment Projects. It would however, be allocated for this purpose only as “*soon as it was deemed feasible*.” Additionally, this fund would be supplemented with external funds much like the vulnerability fund.

Analysis of these policies and official statements showed low-intensity hurricanes were considered serious threats. They failed to propose, however, corresponding actions that would address those threats before rather than after. Instead, the government reacted to these storms

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<sup>25</sup> Annual capital projects within the public sector are referred to as Public Sector Investment Projects.

and their impacts. The National Budget Addresses for 2011 and 2012-2013 captured this reactive approach:

Government continues to exercise tight expenditure controls where possible. However, storms and heavy rains necessitated some unanticipated expenditures to undertake rehabilitation works (BA, 2011).

The ceiling for the overall increase in both Government-guaranteed and Central Government debt is limited to 1.5 percent. Total disbursed outstanding debt increased by \$29.8 million or 3.4 percent, making the net increase in the total debt in excess of the ceiling. This is attributed to loans contracted to meet the cost of rehabilitation of damages caused by Tropical Storm Ophelia and the Layou floods<sup>26</sup> (BA, 2012-2013).

As revealed here, government's exercised tight fiscal control without due consideration for low-intensity hurricanes or storms. This resulted in "*unanticipated expenses*." Supposedly, the events that triggered them, therefore, were "*unanticipated*" even though low-intensity hurricanes occurred annually in Dominica. By failing to consider them, plan appropriately and make the necessary financial provisions, government resorted to loans which in turn increased the national debt. These loans were used for response and recovery despite public policies that proposed novel approaches of mitigation, and vulnerability and risk reduction.

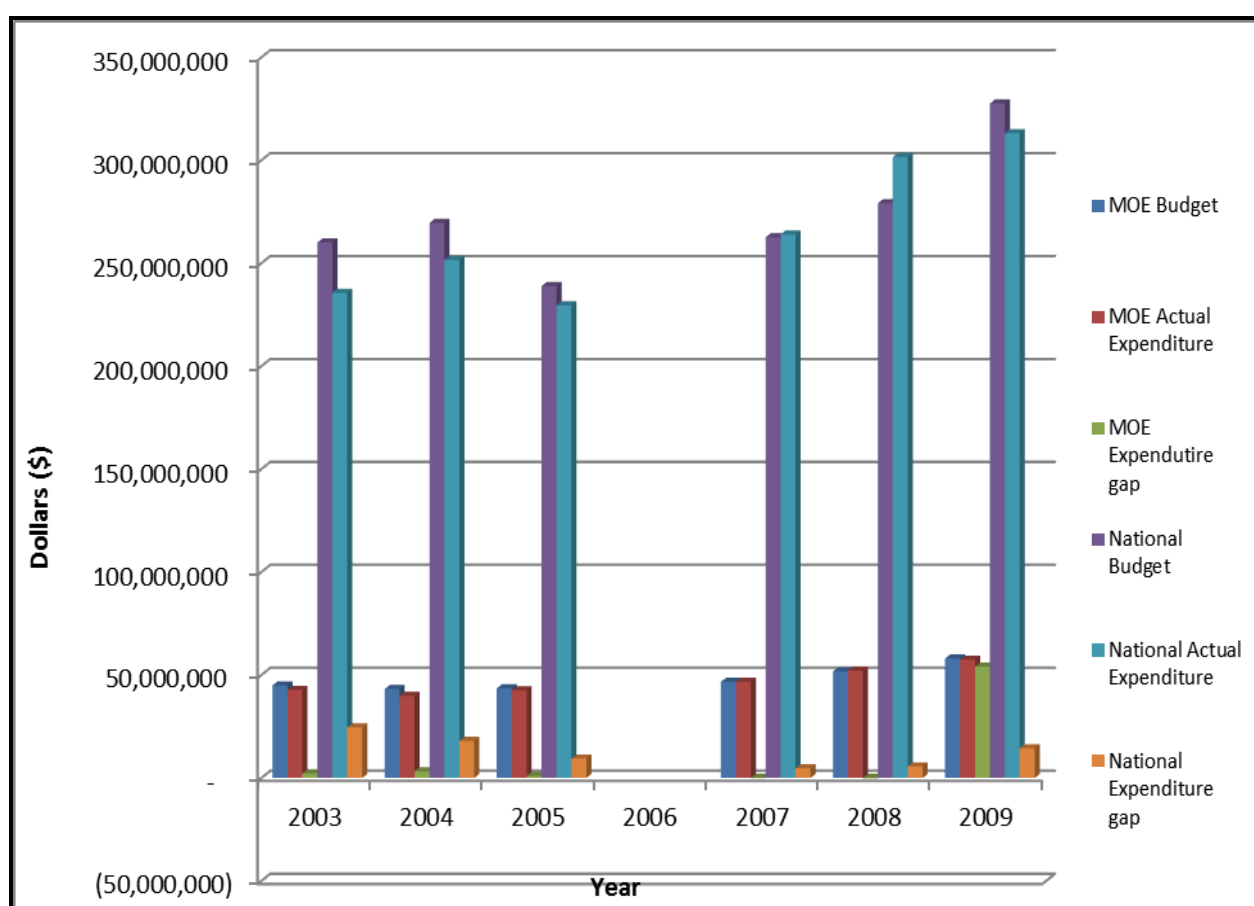
Overall, policy or official statements indicated shifts in the way government thought about addressing hurricanes and disasters. The policy focus was on mitigation and vulnerability and risk reduction. Policy statements, however, were non-binding and used terms, like "*government will explore*" and "*as soon as it is deemed feasible*" and proposed actions that were incongruent with this new thinking. Policies acknowledged the complex nature of the funding issues involved. They failed, however, to demonstrate commitment to the establishment of local funding initiatives that would reduce dependence on external funds and external funding

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<sup>26</sup> In 1997 the Carholm-Huxley landslide dammed the Matthieu Gorge and river, trapping tons of water which eventually collapsed in 2011 destroying the entire lower Layou River Valley, a major banana and tourism region and creating hardship for the nearby fishing community of Layou. It stalled road transportation as a result of sedimentation and persistent flooding from heavy rains and hurricanes.

agencies. Budget analyses indicated there might have been financial resources available locally that could have been committed to addressing low-intensity hurricanes.

Dominica's National Budget showed there were annual surpluses for 2003 - 2010, the period for which data was available. Figure 15 shows the budget performance for Dominica. As depicted, the Ministry of Education, for example, had annual budget surpluses ranging between \$800,000 and \$4 million for the period 2003 – 2010. There were budget deficits for only two of these years. These were 2007 and 2008, and amounted to \$95,000 and \$304,000 respectively.



Source: Ministry of Finance (Raw data only)

**Figure 15.** National and Ministry of Education Expenditure Gaps, Dominica<sup>27</sup>

<sup>27</sup> Data for 2006 was not available

The Ministry of Education was often allocated the largest share of the national budget annually. Between 2006 and 2010, for example, it received 13 – 25% of total allocations. According to Table 10, this was equivalent to 4 - 9% of the annual Gross Domestic Product (GDP). More often than not, the Ministry received priority budget funding which made these surpluses likely.

**Table 10.** Education Expenditure, Dominica, 2006 - 2010

CATEGORIES	2006	2007	2008	2009	2010
<b>TOTAL EDUCATION BUDGET (\$000)</b>	<b>75,643</b>	<b>50,474</b>	<b>65,775</b>	<b>59,760</b>	<b>62,431</b>
<b>Total Education Expenditure as a percentage of National Budget</b>	24.3	16.3	22.7	18.6	12.8
<b>Total Education Recurrent Expenditure as a percentage of GDP in current prices</b>	4.7	6.2	4.6	4.4	5.0
<b>Total Education Capital Expenditure as a percentage of GDP in current prices</b>	3.8	0.9	0.7	0.4	0.2
<b>Total Education Expenditure as a percentage of GDP in current prices</b>	9.0	7.0	5.0	4.0	5.0

Source: Education Planning & Development Unit, 2012

In addition to overall budget surpluses, between 2007 and 2011, surpluses were also recorded on the primary school maintenance budgets. These are shown in Table 11. These surpluses however, were transferred out of maintenance for undisclosed reasons to undisclosed programs and activities. In two cases, they were transferred in April and May, before the close of the financial year which ended on 30 June. The Ministry, therefore, had sufficient time to use these funds as allocated to improve building structures as a protection and hurricane mitigation strategy. Budget funds do not roll over and would not have been available for use beyond June 30.

**Table 11.** Treatment of Primary School Maintenance Budget Surpluses, Dominica, 2007 - 2011

<b>Year</b>	<b>Amount Estimated (\$)</b>	<b>Amount Allocated (\$)</b>	<b>Amount Spent (\$)</b>	<b>Difference (\$)</b>	<b>Remarks</b>
<b>2006/07</b>	285,550	1,003,167	952,451	50,716	\$50,000 virement warrant. <sup>28</sup> taken from head in May 2007
<b>2007/08</b>	594,927	1,049,778	972,759	77,019	\$47,900 virement warrant taken from head in June 2008
<b>2008/09</b>	952,207	1,095,872	1,021,946	73,926	\$73,925 virement warrant taken from head from April to June 2009
<b>2009/10</b>	518,223	1,115,848	1,016,828	99,020	\$93,700 virement warrant taken from head in June 2009
<b>2010/11</b>	<u>1,492,640</u>	<u>1,144,873</u>	<u>1,123,480</u>	<u>21,393</u>	
<b>TOTAL</b>	<b>3,843,547</b>	<b>5,409,538</b>	<b>5,087,464</b>	<b>322,074</b>	

Source: Ministry of Education & Human Resource Development (Raw data only)

The Ministry of Education did not budget for education during low-intensity hurricanes, even though it was legally responsible for addressing it. This is true even when re-allocating surplus funds. These could have been reallocated to address education during low-intensity hurricanes. While policies or official statements expressed the desire to establish funding initiatives to address emergencies, government still depended on external funds, including loans to supplement these funds. At the same time, it failed to commit fully to the use of local financial resources to establish these funds. As Theme 4 will show, this may have been due to the weak institutional capacity, therefore, weak advocacy for policy shifts and official statements made to address education during low intensity hurricanes in Dominica.

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<sup>28</sup> Virement warrants are documents that allows for the transfer of budgeted funds from one line-item to another with justification.



### **4.1.3 Theme 3: Capacity improvement**

The ability to move resources in the direction in which they are required, and the amount in which they are needed are important in disaster responses (Comfort, 2004). Local capacity to do so appeared to be a major resource issue during emergencies (Comfort, 2004). It is the inability of societies to cope using their resources alone that makes education in emergencies such a serious problem for national governments (Kagawa, 2005). Because of these limited local resources to cope and dependence on external assistance, education in emergencies tends to be driven in large part by international humanitarian organizations. These include Save the Children, PLAN, Child Fund and Catholic Relief Services (Nicolai & Triplehorn, 2003; Save the Children, 2007), among others. Bilateral and multilateral agencies such as USAID and UNICEF funded these emergencies since they possessed the resources required to tackle immediate educational and developmental needs of children from infancy to basic education. They also stepped in because of the capacity gaps.

Official documents were critical of the weak institutional capacities for managing disasters in Dominica and recommended improvement. The Medium Term Growth and Social Protection Strategy (GSPS) documents for 2006 and 2012-14, for example, highlighted these criticisms. Accordingly,

The Office of Disaster Management (ODM) falls short of meeting its stated mission and objectives in preventing, mitigating and preparing for potential disasters in Dominica (GSPS, 2006).

The National Emergency Management Organization (NEMO) will continue applying measures, within the frame of its Disaster Management Strategy and Emergency Management Plan, i.e. preventing, mitigating and preparing for potential disasters in Dominica (GSPS, 2012 -2014).

The Office of Disaster Management (ODM) was unable to meet its stated mission and objectives of vulnerability and risk reduction, that is, disaster prevention, mitigation and preparation. Government made recommendations for improvement but it appeared that by 2012, ODM's umbrella organization, the National Emergency Planning Organization (NEPO) had not completed implementation of proposed disaster vulnerability and risk reduction measures. Further, at a meeting of NEPO held on 1 June 2013, however, the Prime Minister raised hurricane preparedness capacity concerns.

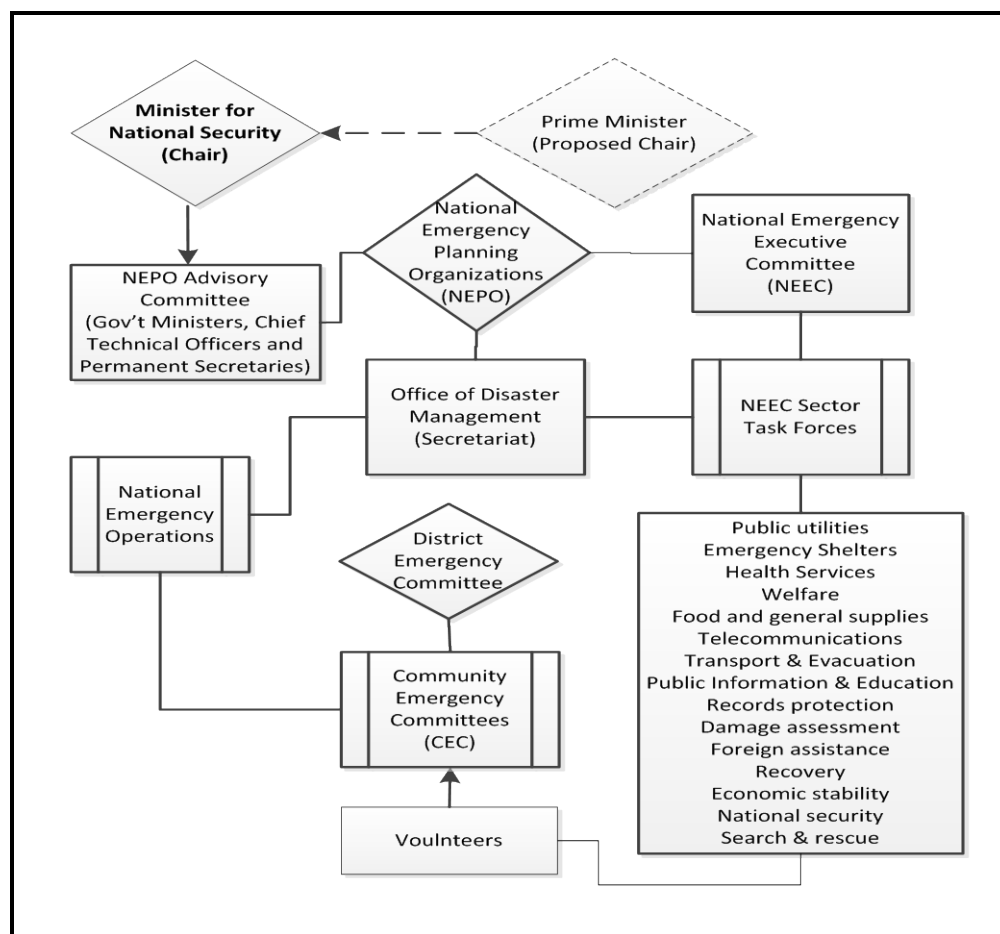
I am still not satisfied with our preparedness efforts and it is reflective in the various committees that are charged with the responsibilities as enshrined in the disaster plan and these committees fail to meet and those who meet, do so one or two days before this meeting. I am seeing reports dated 28<sup>th</sup>, 29<sup>th</sup> and 30<sup>th</sup> (May) 2013. We all know that the hurricane season begins on June 1st and I would really like to urge those who are members of those committees to convene meetings continuously. It doesn't have to be just before the first of June, because the disaster committees are not only charged with preparing for the hurricane season, you are charged for any event including flooding, fire, major slides which has been occurring throughout the year (Government Information Service, 3 June, 2012).

Slipshod approaches driven by inappropriate attitudes to disaster preparedness appeared to be a serious problem despite policy change efforts to improve capacity in the past seven years particularly at the ODM and NEPO.

NEPO is made of representatives from public sector ministries; service and non-government organizations (NGOs) and is responsible for managing disasters in Dominica. These included the Ministry of Education; Public Works; Rotary and Kiwanis clubs, Girl Guides, Boys Scouts among others. The Minister responsible for National Security chaired that organization. The Prime Minister was recommended to chair the organization for improved effectiveness.

The National Emergency Planning Organization (NEPO) is organized into fifteen sub-committees or sector task forces responsible for key sector or emergency areas. These include

the Health Services; Welfare; Emergency Shelter; Search and Rescue and Transport, Evacuation and Equipment. Figure 16 is an organogram of the National Emergency Planning Organization (NEPO), its affiliated committees, sub-committees or task forces at the national, districts and communities levels. The Office of Disaster Management (ODM) is NEPO secretariat responsible for implementing NEPO's decisions.



**Figure 16.** Institutional and Organizational Arrangement for Disaster Management, Dominica<sup>29</sup>

<sup>29</sup> This organogram was developed based on my reading of the National Disaster Plan, 2001.

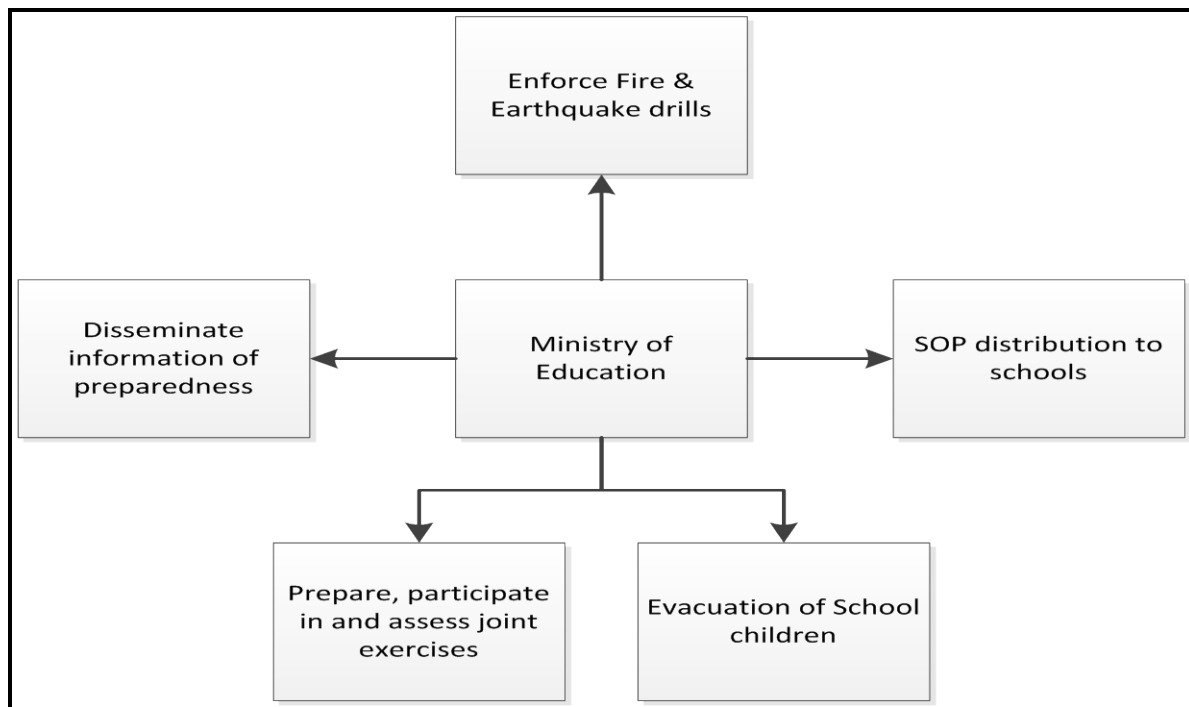
The broken lines indicate the policy recommendation to place NEPO under the direct responsibility of the Office of the Prime Minister.

These roles were designed to ensure the safety of school spaces, children and teachers but were secondary under arrangements for managing disaster nationally. The education sector was a secondary and not primary agency in disaster organization and management in Dominica. It constituted, however, the largest public sector ministry and owned most of the buildings operating as emergency shelters in the state. As the organogram showed it was not a key taskforce under the National Emergency Preparedness Organization (NEPO). The Education Permanent Secretary, however, was a member of NEPO's Advisory Committee (NDP, 2001, p. 13). The Chief Education Officer was a member of the National Emergency Executive Committee (NEEC), and three NEEC Sector Task Forces namely the Emergency Shelters; Public Information and Education and Economic Stability (p. 14). None of these taskforces were related to education. Additionally, the National Disaster Plan, 2001 made provision for an Education Division Representative to sit on Damage Assessments Task Force, one of the National Emergency Executive Committee Sector Task Forces. At the time of this study, such a representative had not been appointed. In addition, education and school personnel had not held membership in District or Community Emergency Committees, even though most schools were emergency shelters.

Under the National Disaster Plan (2001), the Ministry of Education had no primary responsibilities for disaster and emergency management (see p. 23). Rather, its roles and responsibilities as outlined in National Disaster Plan (2005, p. 52) and shown in Figure 17 were characterized as secondary. These were

- a. Selection and maintenance of school buildings to be used as shelters and their staffing in areas where necessary.

- b. Ensure that information on emergency Standard Operating Procedures (SOPs) is distributed to educational Institutions.
- c. Ensure schools are prepared to deal with all disasters and enforce fire and earthquake drills.
- d. Liaise with DEC and obtain information on local disaster plans.
- e. Assist in preparing, participating and assessing joint annual exercises with all NEPO response services and submit action reports to the ODM.



**Figure 17.** Role of the MOE in School and Educational Institutions Emergency Management, Dominica

Officially, the Ministry of Education itself had not assigned any of these responsibilities to its technical units; neither were they included in its official plans or operations. The Ministry of Education Strategic Plan, 2012-2015, for example, made no reference to

education during low-intensity hurricanes or any disasters. The dated Education Sector Plan, 2005-2010 which was up for revision did not make any reference to them either.

The Education Act, 1997 made only one reference to disasters or emergencies. Section 34 (1) of that Act gave the Minister of Education and Chief Education Officer responsibility for schools closures during disasters including natural disasters which would include low-intensity hurricanes. In accordance with the Act, principals could also seek approval for school closures during these emergencies. Where the Minister or Chief Education Officer could not be reached, principals could close schools and submit reports ex-post outlining their reasons. Section 51 (2) (b) of the Education Regulations 2011, reaffirmed this responsibility for the Minister and Chief Education Officer but failed to mention the principal's role.

Overall, the Office of Disaster Management (ODM) and NEPO had difficulties meeting their stated mission and objectives of disaster prevention, mitigation and preparation on account of the weak institutional capacity and attitudes of those responsible. Recommendations for capacity improvements had not been fully implemented five years after they were first proposed. The National Disaster Plan, 2001 assigned education in emergencies roles and responsibilities to the Ministry of Education, but failed to provide the organizational autonomy to fulfill its obligations like the dissemination Standard Operating Procedures (SOPs) to educational institutions. Rather it had the Ministry tied up in five other task forces that were unrelated to education. The Ministry of Education, in turn, had not incorporated any of these responsibilities into its policies, plans and operations nor had it assigned any of them to its technical units.

#### **4.1.4 Summary of document reviews**

In summary, official documents contained policy references to mitigation, vulnerability and risk reduction as government's key approaches to addressing disasters. These signaled a shift in policies that would address disasters before they occur. These included proposed programs and funding initiatives that would facilitate implementation of these policies. They were expressed, however in non-binding language, like "where it deemed feasible" that reflected an unwillingness to commit fully to the establishment of these funding proposals. None of these policies and funding initiatives, however, made direct reference to education. Although the National Disaster Plan assigned responsibilities for education during disasters to the Ministry of Education, it did not allow for the organizational autonomy that would allow it to fulfill its obligations. The Ministry was assigned roles in five other task forces that were unrelated to education or education during LIH. Moreover, the Ministry had not incorporated education emergencies into its own policies, plans and operations. It demonstrated with these actions, that education was not being treated as seriously it should during low-intensity hurricanes. The elite interviews which follow substantiated these assertions.

### **4.2 ELITE INTERVIEWS**

"Disasters have become a policy problem of global scope...we must therefore change the policies of today that rely heavily on sending assistance only after tragedy has occurred" (Comfort, et al, 1999, p. 39). Elite Interviews with senior public officers in the Ministry of

Finance; Ministry of Public Works, and Ministry of Education confirmed low-intensity hurricanes were serious policy problems for Dominica.

Nine elite officers were interviewed to explore the extent of the problem, policy issues and strategies for addressing education during LIH. Table 4 identified three major themes that emerged. First, low intensity disasters and emergencies had adverse impacts on the economy and education and policies and plans did not reflect these impacts. Second, government depended largely on external funding to address LIH. Third, education was deprioritized during low-intensity hurricanes (LIH). Sections 2.7 – 2.9 explored these themes.

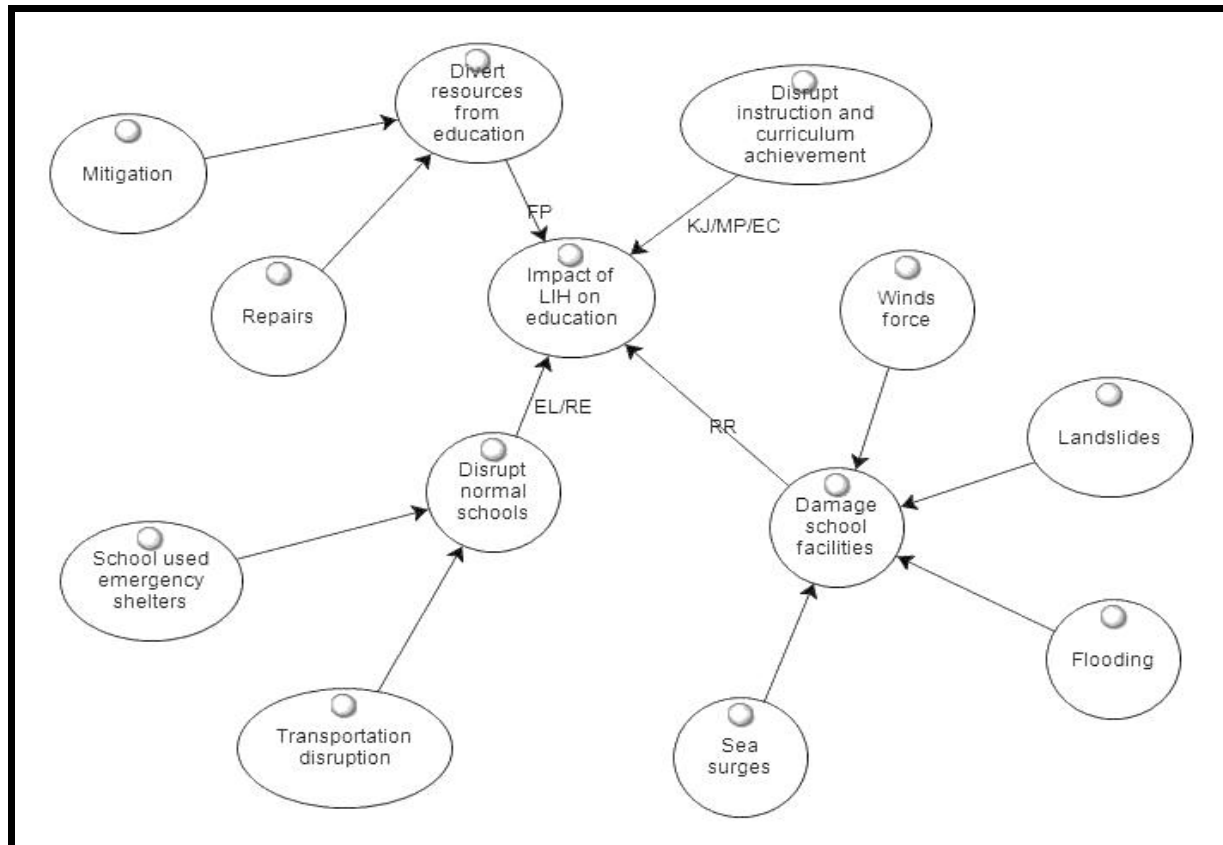
#### **4.2.1 Theme 4: Adverse impacts on education and limited policy responses**

Impacts of emergencies on education are among the most documented aspect of education in emergencies (see Aguilar & Retamal, 1998; 2009; Pigozzi, 1998; Sinclair, 2002; Vargas-Baron, 1998). They destroyed or disrupted education systems and made it difficult for countries to cope using their resources alone (Kagawa, 2005; Pigozzi, 1998; Vargas-Baron & McClure, 1998). Experience demonstrated, however, low-intensity hurricanes in Dominica did not paralyze the entire education system but had seriously affected essential aspects and disrupted schooling.

Overall, interviews with elite officers confirmed low-intensity hurricanes had adverse impacts on Dominica. First, they damaged the economy, the banana industry and infrastructure like buildings and roads through either direct gale force winds or through floods and landslides. According to the Financial Secretary, “*Dean destroyed 4% of GDP and the direct and indirect costs were significant*” (RE). As shown already Hurricane Dean caused damages in excess of \$60 million and Hurricane Ophelia about \$32 million (UNDP, ECLAC & IICA, 2007; IMF,



2012). Second, they adversely effected education. Figure 18 is a thematic model depicting effects on education identified in elite interviews. The arrows connect sub-themes or child nodes to parent nodes or themes. These arrows are labeled using unique identifiers for transcripts sources.



**Figure 18.** Impacts of LIH on Education, Dominica

Four sub-themes emerged when elite officers were asked to identify the impact of low-intensity hurricanes on education. First, they damaged school facilities. Second, they disrupted normal schooling. Third, they disrupted instruction and curriculum achievement. Fourth, they diverted resources away from education. They also identified the specific causes of these sub-themes as depicted in Figure 9. Normal schooling was disrupted, for example, because school

buildings were used as emergency shelters or transportation to schools was disrupted. Heavy rains and disruption in water services and flooding also caused disruptions (RE). One Elite Officer within the Ministry of Finance explained:

Disruption of services! The normal course of events, if it rains heavily, especially in rural areas, children are not going to go to school. In some cases, the water system is affected even in Roseau, given the problems we have with sedimentation. When there is no water or we have this over outflow, and so on, the students are sent home if there is no water depending on the nature of the school. If it is too dark and if it is going to prove a safety issue for students, they will be sent home particularly if they have to walk home cross rivers and over long distances and so on. So it is a problem, also, the uncertainty of some of those storms sometimes causes decisions to be made in terms of the pre-closure of schools. That's another problem. Schools are also used as hurricane shelters and would have to be closed and children sent home in preparation (RE)

The Ministry of Education's Permanent Secretary and the Ministry of Public Works' Chief Technical Officer also identified school disruptions as key impacts. They occurred frequently, and as a result, instruction time was lost. They noted:

Well, because children have to go home early, then you lose time in the classroom with these children and the frequency of the coming storms help to add to that problem. If every week you're preparing for a hurricane, it means every week you're losing time in the classroom with the children and you know you have set dates for exams and everything (MP).

Obviously because of our large school population (*15,000*), they will be affected and any hours or days lost in education are an obvious problem and will pose an impact on the education sector, yes. Many times when the event passes it takes a certain amount of time to repair the roads, you know, to get the institutions they affected ready. The events pose a challenge to us in this regard (KJ).

Instruction time was lost when preparing for hurricanes, irrespective of their magnitudes because schools were emergency shelters. No record, however, of the frequency of these disruptions or number of instruction days lost as a result were ever recorded, officially. There were no provisions made to enforce rescheduling those lost days.

When asked to assess measures and policies in place to address low-intensity storms, elite officers believed some learning had occurred but did not result in significant changes. Five of

nine officers interviewed believed, 1) attitudes and behaviors had not changed, 2) planning and collaboration had been inadequate at the line ministry levels<sup>30</sup> and 3) a decision to establish a proposed contingency fund, for example, had not been made. One officer explained:

No, we haven't move (*and why? I asked*) Well for the same reasons we were discussing a while ago. I guess we just need to come, decide, ok, let's plan this thing properly. We know we are being faced with hurricanes every year. We have our experiences in the past. Let's make the decision going forward (FP).

An elite officer, who acted as Secretary to the Cabinet<sup>31</sup> of Government Ministers after Hurricane Ophelia, confirmed these learning gaps:

We should have learnt more by now. After Ophelia, I was acting Cabinet Secretary and did not have a clue what the road map was. I called ODM (Office of Disaster Management) and they were unaware. There was no response mechanism for the financial center (7 floors). Clearly, we were not fully schooled. It is not a direct science but there must be fall back positions. People agitated after Isaac<sup>32</sup>, clamoring about payments and salaries for the work days lost. We need to come up with a template for action. During the October rains, we were least affected on the West Coast but there was a donor meeting held in Dominica and CDB (Caribbean Development Bank) got stuck in the Carib Territory<sup>33</sup>. We may need a suitable guest house for lodging in that part of the country. We are still learning. We were all personally affected by Ophelia. It took me two days to get to Massacre (four miles from town) and the Layou issue (flooding) made it worse because of lack of communication mechanism and absence of a strategy to deal with the floods (RE).

This account confirmed ODM's weak capacity highlighted earlier in the document reviewed. It also showed the limited cognition associated with LIH and its road map for action. The absence of road maps for evacuation, lack of fall back positions, contingencies or templates for action, lack of communication mechanisms and the absence of a strategy to deal with associated floods all reflected lessons yet to be learned.

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<sup>30</sup> Each line ministry is responsible for planning and budgeting in keeping with its portfolio but these are vetted by the Ministry of Education to ensure they are kept with proposed national policies and budgets

<sup>31</sup> The Secretary to the Cabinet of Ministers of Government is also head of the Public Service.

<sup>32</sup> She makes reference to Hurricane Isaac, another low-intensity hurricane which affected Dominica in 2012.

<sup>33</sup> The Carib Territory is a 300 acre reserve for the indigenous Kalinago people and located on the east coast of Dominica.

Another elite officer, however, was of the opinion that Dominica was better prepared for handling hurricanes. He believed preparations for hurricanes were more structured. He based his position on 1) the presence of a disaster management plan, 2) frequent meetings held in preparation for hurricanes and other natural disasters, and 3) the issuing of warnings ahead of these disasters. He explained.

I think we are, if we go back to a couple years when we had, that wasn't the first hurricane for Dominica but the one that really stands out is 1979, Hurricane David. When you talk about a real national, real impact hurricane and even during that time Dominica wasn't as prepared as it is right now because even with the whole disaster management plan, I mean we have meetings going through a year even before the appearance of a hurricane or any natural disaster. One would be warnings, meetings, the whole preparation part of it is much, much, much structured and the thing is, I can't say anything negative for it, it is really, really structured. So we are very much prepared for any occurrence (EC).

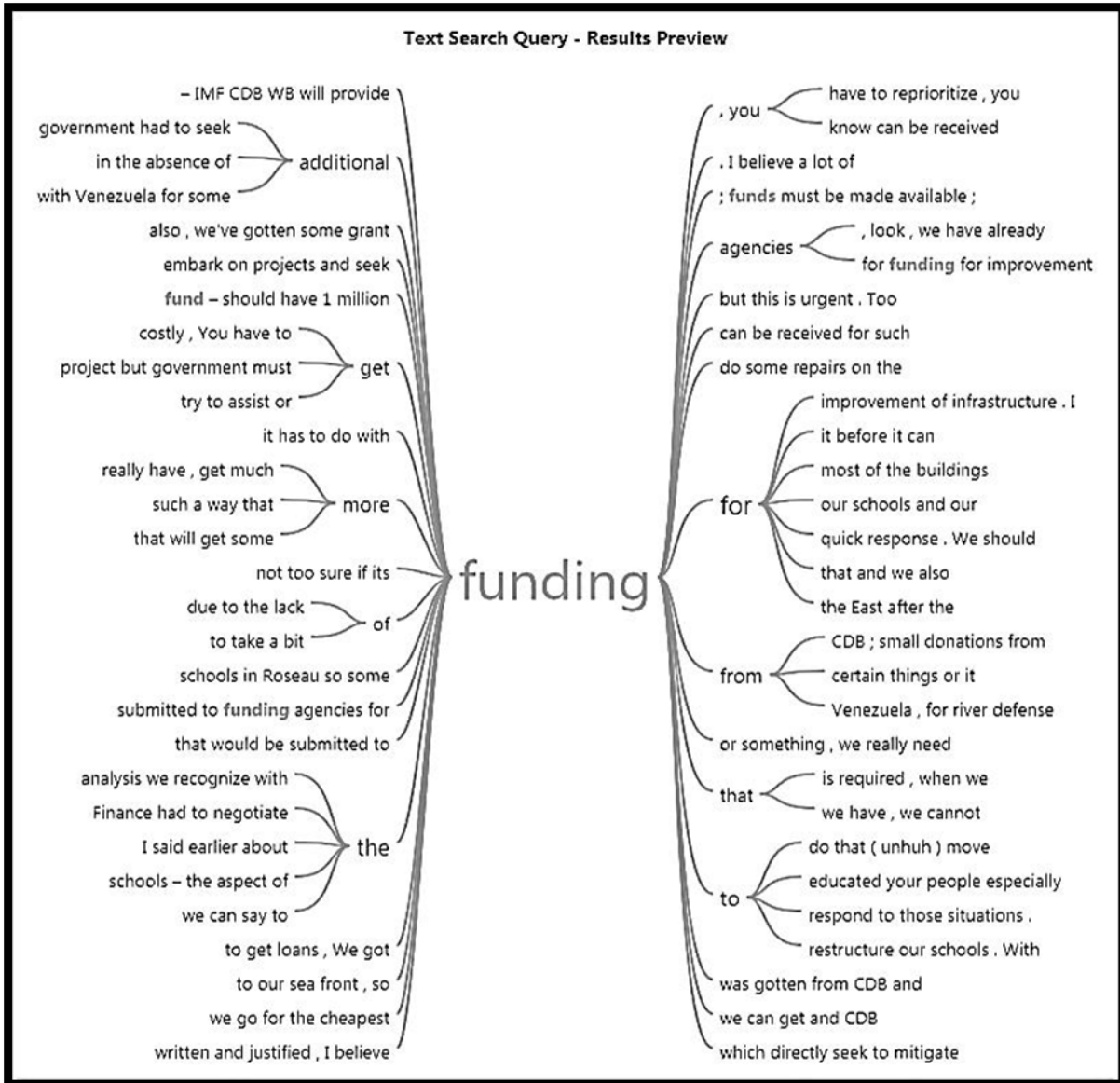
An education elite officer also believed, Dominica learned from its chronic exposures to hurricanes. His point of reference, however, dated back to Hurricane David, a catastrophic Category 5 hurricane which devastated Dominica in 1979.

Government may have learned when it came to catastrophic hurricanes but did not appear to have done so for education during low-intensity hurricanes. Progress on collaboration and information sharing has been slow. As shown, elite officers believed failure to decide, collaborate, plan and share information on LIH were at the heart of failures to better address education then (FP, RE). Ministry of Finance elite officers responsible for overall supervision of planning in the public sector held line ministries, including the Ministry of Education, responsible for these failures (RE, FP). These ministries failed, for example, to make contingency arrangements for addressing education during LIH. This failure to learn meant appropriate contingencies for addressing it were not in place. This resulted in unplanned, reactionary responses that depended on external sources of funding as Theme 5 showed.

#### **4.2.2 Theme 5: External financing of education during low-intensity hurricanes**

Finance is a critical resource in disaster and education emergency management in developing countries. Globally, demands for disaster funds outweigh availability (Wayne & Hedger, 2010). Demands were particularly acute in small island states prone to disasters (Rasmussen, 2004, Collymore, 2004). Finance also remained inadequate due to increases in the number and cost of disasters worldwide. This was so even with contingencies, risk insurance coverage, international aid and donor assistance, and funds transferred from planned activities and development projects to emergency response (World Bank, IEG, 2006; Wathne & Hedgers, 2010).

Chronic dependence on external funding emerged as a key theme in elite interview responses. These funding terms and their derivatives are depicted in the word tree shown in Figure 19.



**Figure 19.** Word Tree for "Funding and its Derivatives" in Interview Response of Senior Public Officers

This NVIVO 9 “funding and/or its derivatives” word tree of elite responses produced 29 references. These included:

1. IMF/CBD/World Bank will provide funding for the East of Dominica (RE).
2. Government had to seek additional funding in respond to these situations (EL).

3. We have gotten some grant funding from Venezuela for River Defense (EL).
4. Submitted to funding agencies for funding for improvement of infrastructure (RR).

When asked, elite officers identified three sources of funding, two of which were external, for addressing low-intensity hurricanes though not education specifically. These were grants and gifts from friendly governments; loans from the Caribbean Development Bank (CDB) and the Chinese government in particular, and the diversion of local fund within line ministries.

The Ministry of Education diverted budgeted funds away from planned activities primarily to provide relief assistance to students for the procurement of books; to replace damaged uniforms and repair schools after LIH. One education elite officer described these diversions:

Of course the schools usually suffer certain forms of damage, sometimes through flooding, sometimes the roof, the roofs of the schools are damaged, leakages and these are things normally we have not budgeted for, the ministry would not have budgeted for, and so funds would have to be diverted from other planned projects into these avenues. Students suffer other things like their textbooks would be damaged and destroyed uniforms and so the ministry has to now step in to assist them in order to get them back on stream to get back to school. All these are not normally budgeted for but in giving assistance, funds would have to be diverted from other projects that we had planned into the assistance that are given to students and for repairs to school after the damages.(VC)

This unplanned, ad hoc approach to addressing education during LIH, focused on relief assistance rather than child protection; response and recovery rather than vulnerability and risk reduction. This occurred because funds were insufficient and no provisions were made to incorporate education during LIH into the Ministry's programs and budget. It was neither seen nor treated as an integral part of education planning in a country with chronic vulnerabilities and risks to low-intensity hurricanes. One elite officer in education explained;

Money is never sufficient in the ministry of education. It is never sufficient. There is always something to do. Today, if we get a godfather who could say to us look what are some of the things they you need to do for your schools, we sure we would find uses for that money without wasting it but putting it to good use even with a storm, an impending storm or the direct attack of

a storm, we always require resources, we always require resources to do work at the school level (SH).

Insufficient funds appear to be the cardinal issue and a proxy for shoddy prioritizing, planning and budgeting. The assertion was that more of it would have averted the problem of LIH for education. The notion of a “godfather” was a likely a metaphor for external funding sources for education during LIH. This assertion absolved the ministry from its responsibilities and transferred them to some fictitious surrogate, “a godfather”. Consequently, planned programs have had to be suspended or curtailed to address resulting impacts. Two elite officers in Finance and Public Works believed the central issue was the failure of line ministries to plan adequately for emergencies (FP; KJ). There appeared to be no enforcement functions either. As a result, the Ministry of Finance could neither secure nor allocate the necessary funding.

Failure to plan and budget therefore, resulted in reactive decisions that included dependence on external grants and loans. Government, therefore, accessed low-interest rapid response loans from the Caribbean Development Bank (CDB) to address the impacts of low-intensity hurricanes but only after they occurred. The result has been chronic borrowing and increased debt.

Four elite officers (Finance and Public Works Ministries) confirmed the use of loans to address these LIH (RE; FP; KJ; EL). One of these affirmed:

What we had to do was borrow, borrow. We had to get loans. We got funding from CDB; small donations from one or two countries, friendly governments but mostly we had to contract new loans which increased our debt. The response is mostly based on external funding (FP).

There appeared to be chronic borrowing and dependence on friendly government, the latter being small. The popular approach was to “contract new loans because the response was mostly based on external funding” (RE). A Ministry of Finance elite officer detailed the extent of the



borrowing that occurred after Hurricane Ophelia (2011) despite donations from friendly governments. She explained:

In the case of Ophelia, we had to take out loans \$30 million from CDB; for the Elmshall Bridge<sup>34</sup>, \$10 million and Layou \$35 million. We also receive grants from China and other friendly governments (RE).

The attitude appeared to be total resignation, general malaise and apathy associated with addressing low intensity hurricanes in Dominica. She continued:

We have no choice; there is no budget allocation for storm damage, and line ministries never seem to follow the process. We have no choice but to establish a disaster fund. We should have one million funding for quick response. We should have air lifting capabilities, access to schools, paying for clearance – quick response; dependency on external, local resources – we have no break from these storms: Each year there is something; there were no repairs last year and then there is another this year (RE).

The failure of line ministries to budget for storm damage resulted in extensive borrowing. In the case of Hurricane Ophelia, government borrowed \$75 million which was about 30% of the 2011 national budget (RE). As at June 2011, the debt to GDP ratio was already 56%. A local disaster fund worth \$1 million should have been in place but was not because of the failure of line ministries to budget appropriately (RE). There appeared to be no agency delegated with the authority to enforce compliance. The Ministry of Finance specifically, the Financial Secretary and Budget Controller, however, supervised the budgetary process. Permanent Secretaries<sup>35</sup> as chief financial officers prepare and submit line ministries budget for the Ministry of Finance approval. The Ministry of Finance in turn adjusts these budgets to bring them in line with economic outlooks and government spending policies for the year. In the absence of allocated

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<sup>34</sup> This is a flat bridge that connects the Elmshall Suburb to the City of Roseau. During heavy rains or hurricanes it becomes impassable and the community is cut-off. There is an alternative route but it is susceptible to landslide and rock falls

<sup>35</sup> Each Ministry is headed by a Permanent Secretary or elite officer who is responsible for its management and financial accountability.

funds for LIH and response of the debt burden, government sought debt-friendly alternatives like grants. However, grants were often small amounts (FP).

Government's grant funds to assist with hurricane response were not allocated to education. It received grants from the Government of People's Republic of China and Government of Venezuela for response-mitigation activities but mostly for road repairs and reconstruction, and for constructing retaining walls. On Public works elite officer explained;

I must say thank God for the initiative of the Government of Dominica, government with friends in these times. They really came forward seriously. We had assistance from Venezuela. We had assistance from the Chinese government and other government from the region but to mitigate the effects as far as it goes to the financial part of it. Dominica was able actually to do the necessary and in some instances we had Dominica actually helping out in getting some of the work done, although there wasn't much finance, but the finance that was needed we were actually able to get it from donors. (*Any loans? I probed*) Not that I know of. I know there was some help from CBD (EC).

Could it be that the apparent ease with which loans and grants were secured negated the desire or obligations to accept full responsibility, locally for low-intensity hurricane impacts? Could this have also influenced the failure to establish the contingency fund proposed in 2006? The Ministry of Finance elite officer discussed the challenge involved:

We (Ministry of Finance) have been trying to set up for a number of years a Contingency Fund just to deal with that. We have never been able to do it (*Why? I probed*) because there is never enough funds to allocate to that contingency fund or accounts because the requests that are coming for things that you know that you have to do is already not enough. You have to cut back so much that there is never enough money to say we are going to allocate 10%. You put it in a special fund in the event of a disaster, we have, and you know we have that money there. It has never materialized. We just go and hope this year will be a good year and that God would be good to us (FP).

The insufficient funds debate and budget cuts resurfaced in this exchange to explain failures to establish this contingency fund. The notion of LIH as "Acts of God" also resurfaced. "Hope and the goodness of God," it seemed, would take care of that situation. This magical thinking released government and elite officers of their primary responsibilities for addressing the policy problem of low-intensity hurricanes. This is significant since government contributes

to the Caribbean Catastrophic Risk Insurance Facility (CCRIF)<sup>36</sup> but did not demonstrate similar commitment to low-intensity hurricanes. An elite officer within the Ministry of Finance explained:

There is a regional fund called the Caribbean Catastrophe Risk Insurance Facility (CCRIF). And all of the governments are contributing to this, right. So I did not even remember that so that is one step Caribbean countries have already taken to mitigate the disasters so that's a good point you made there.

We can have discussions on how to expand the facility to include LIH, all kinds of disasters. It means the government would have to be called upon to contribute larger amounts into that fund. For us it is quite significant, over a million per annum. Quite significant three years we have been paying into that. Last year we paid 1.9 million, almost 2 million (FP).

While large catastrophic hurricanes got government's attention and funds, chronic low intensity hurricanes were left to the "hope and the goodness of God." The rationale offered in this exchange is that allocating funds ex-ante for low-intensity hurricanes may be too costly. Notwithstanding, education was not mentioned in these conversations or decisions about LIH funding.

Overall, external funds like loans, grants, and in some cases funds diverted from planned activities were being used to address low-intensity hurricanes. Systematically allocating local funds to address them appeared to be a significant challenge for government. In the case of education, funds were diverted from budgeted activities to provide hurricane relief for students. To what extent then should government accept full responsibility for addressing chronic, low-intensity hurricanes? Which agency should have been made responsible and held accountable for ensuring the necessary funding protocols were in place? Where should education feature on the list of priorities? The latter is essential since education is considered the fourth pillar of

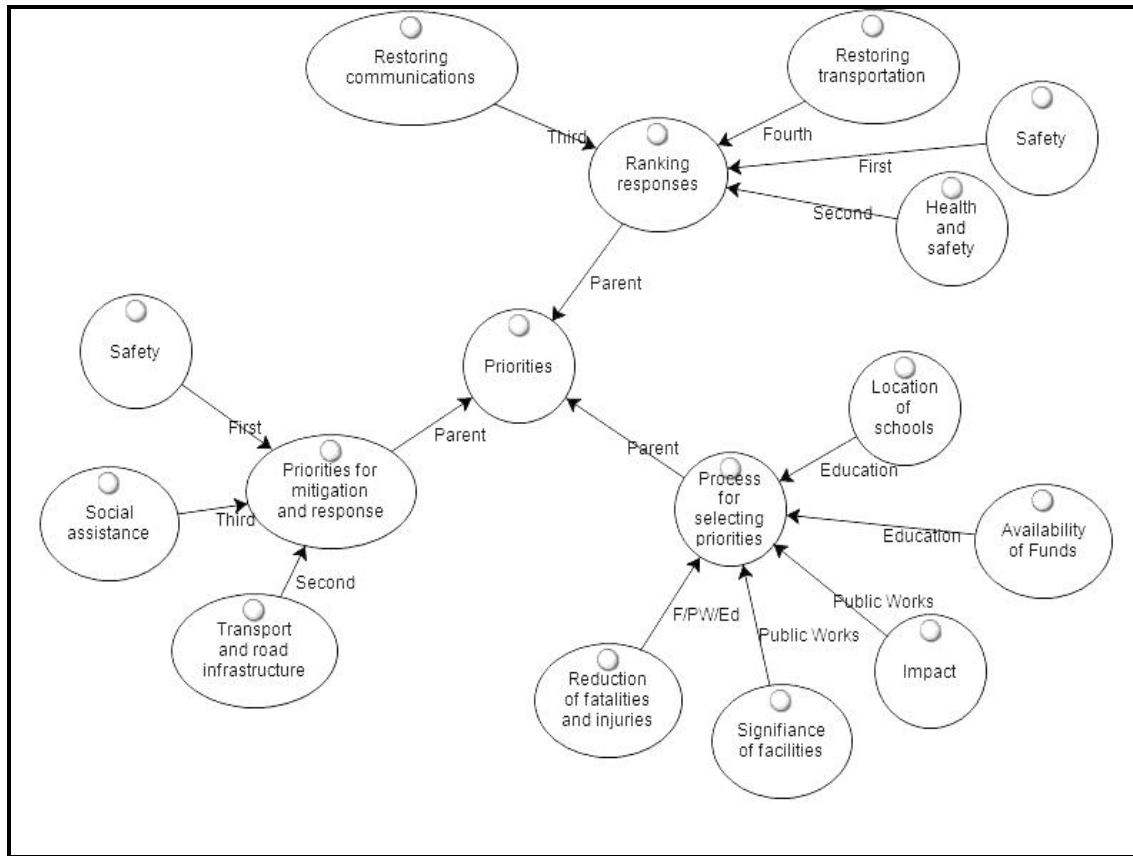
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<sup>36</sup> The CCRIF is a multi-country insurance that allows Caribbean Country to pool their risk against disasters like hurricanes. Members pay into the fund. In

humanitarian response; however it was deprioritized during low-intensity hurricanes in Dominica as Theme 6 will show.

#### **4.2.3 Theme 6: Education was deprioritized during emergencies**

Schools and education are critical to the lives of children (Aguilar & Retamal, 2009; Machel, 1996). They symbolize a return to normalcy and a return to happiness during emergencies (UNICEF/University of Pittsburgh, 2005). Schooling is essential for providing psychosocial support and child protection (Aguilar & Retamal, 2009; Pigozzi, 1999; Sinclair, 2002; Vargas-Barón & McClure, 1998). Reopening schools as soon as possible after disasters is recommended since education is the fourth pillar of humanitarian response (Aguilar & Retamal, 2009; Machel, 1996; Pigozzi, 1996). Moreover, children and older adults should be of special concern in the aftermath of disasters since they are among the most vulnerable (FEMA, 2013). Elite Officers were asked to determine the extent to which education was considered priority during emergencies. Specifically, they were asked: 1) what is determined to be priority? 2) How is that priority determined? 3) Where does education rank on the list of priorities? Figure 20 is an NVIVO 9 thematic model of their responses.



**Figure 20.** Priorities and Priority Determinants during LIH, Dominica<sup>37</sup>

Overall, education was deprioritized during chronic low-intensity emergencies. Instead 1) physical safety of people and property; 2) health and safety; 3) restoring communications; and 4) restoring transportation were the top four priorities. As expected, elite officers within the Ministry of Finance and Ministry of Public Works identified physical safety or protection of life and property as top priorities during low-intensity hurricanes. As a result, roads clearances to facilitate movement, transportation and communication during hurricanes were priorities for the

<sup>37</sup> First, second, third...are priority ranks.

F/PW/Ed are ministries within the public service: F - Ministry of Finance; PW - Ministry of Public Works; Ed - Ministry of Education and are the transcript sources

Ministry of Public Works. The elite officer provided the rationale for the Ministry of Public Works priorities.

When responding and mitigating, our primary concern would be protection of life and protection of property and when we say property we talking both public and private. The area of public property we are most concerned about is our road, communications infrastructure to ensure we maintain its resilience and allow for its use so we try as much as possible in response to ensure all roads are motorable as quickly as possible in responding to a storm, so that people are not restricted in movements because that's important especially when you are responding to emergencies situations. You don't not want to have people injured and you cannot get to out of certain areas and so on that is always a priority for us to ensure that we restore normalcy communications and also where persons' lives and properties are threatened then we respond to that also (EL).

Elite officers in the Ministry of Finance and Ministry of Public Works did not identify education as priority. Rather, they appeared to be uncertain about where education ranked during LIH. An elite officer in the Ministry of Public Works asserted:

We need to find out or we find out really is anybody in danger in terms of life? Obviously, that would be our first line of response, safety. Next in line we look at transport but making sure that the road network is open up as quickly as possible from there we move on. So first, Safety is really the overriding criterion for doing our response (KJ).

Am, I not too sure we have ranks but in terms of, maybe just looking at the general situation, our first priority will be that of health and safety, transportation, communications and maybe somewhere under there we have education (KJ).

According to this elite officer, "maybe somewhere under there we have education." This is significant because the Ministry of Public Works is responsible primarily for overall response during disasters which included people's physical safety. This did not seem to include the youngest and most vulnerable. Most likely, it was being treated as a parental responsibility

Outside of the Ministry of Education, the connections between safety, schooling and children during LIH did not seem apparent to these elite officers. One elite financial officer recognized the importance of safety but suggested it was a parental responsibility. As a result, the mandate, therefore, was to connect children and parents during LIH but as she noted, evacuation routes or procedures to do so did not exist. She explained:

Safety but the truth is we need to look at different levels which includes connecting children to parents. We may not be able to and evacuate routes are not available. There is no process for evacuation. Topography is not friendly and classroom teaching is not priority as school days and terms can be adjusted (RE).

Most communities and schools had single access routes, which were not motorable during low-intensity hurricanes. All roads, for example, on the West Coast were flooded and impassable during Hurricane Ophelia, cutting-off thousands of children from their homes. As emergency shelters, students would have been safer at schools, but most schools were not organized to accommodate them.

Rhetorically, and as expected, elite education officials recognized safety of children as a priority. Under normal circumstances, the Ministry of Education was responsible for students, safety and security while at school. It would be, as well, under adverse conditions like LIH. An elite officer in the Ministry of Education said “*Safety of the children, safety of the staff and the safety of the building*” were priority. Similarly, another of the officers believed “*safety of children, safety of teachers and safety of school buildings as education centers and emergency shelters*” were priority. He explained:

Safety is a key issue from us; and, am, safety from several perspectives. The mere fact that students attend a building, our schools, we want to ensure that they are safe. We want to ensure that they are in a learning environment that is conducive to the process of education. So these for us are keys. The other area, because the schools are being used as centers, hurricane shelters, and so forth, we also take that into consideration. If we were to get another David<sup>38</sup> what would be the kind of situation, would it be able to withstand that and how well would be able to house in that institution. So we take these things into consideration. I think these are our consideration: safety of children, safety of teachers on a day-to-day basis at the school and when there is a storm (SH).

While these elite education officers recognized safe buildings, student and teacher safety as priority, as noted already, in practice, policies, plans and budgets that would have guaranteed their safety were not in place. There was a gap, therefore, between the warranted assertions of

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<sup>38</sup> Reference to Hurricane David, a Category 5 hurricane on the Saffir Simpson Scale, that devastated Dominica on 29 August 1979 killing 43 people and destroying 80% of the housing stock and

these officers and their line of action; between what they believed and what they actually did; between rhetoric and practice. Their failure to act appropriately on these assertions placed students, teachers and school property at risk during LIH.

#### **4.2.4 Summary of Elite interviews**

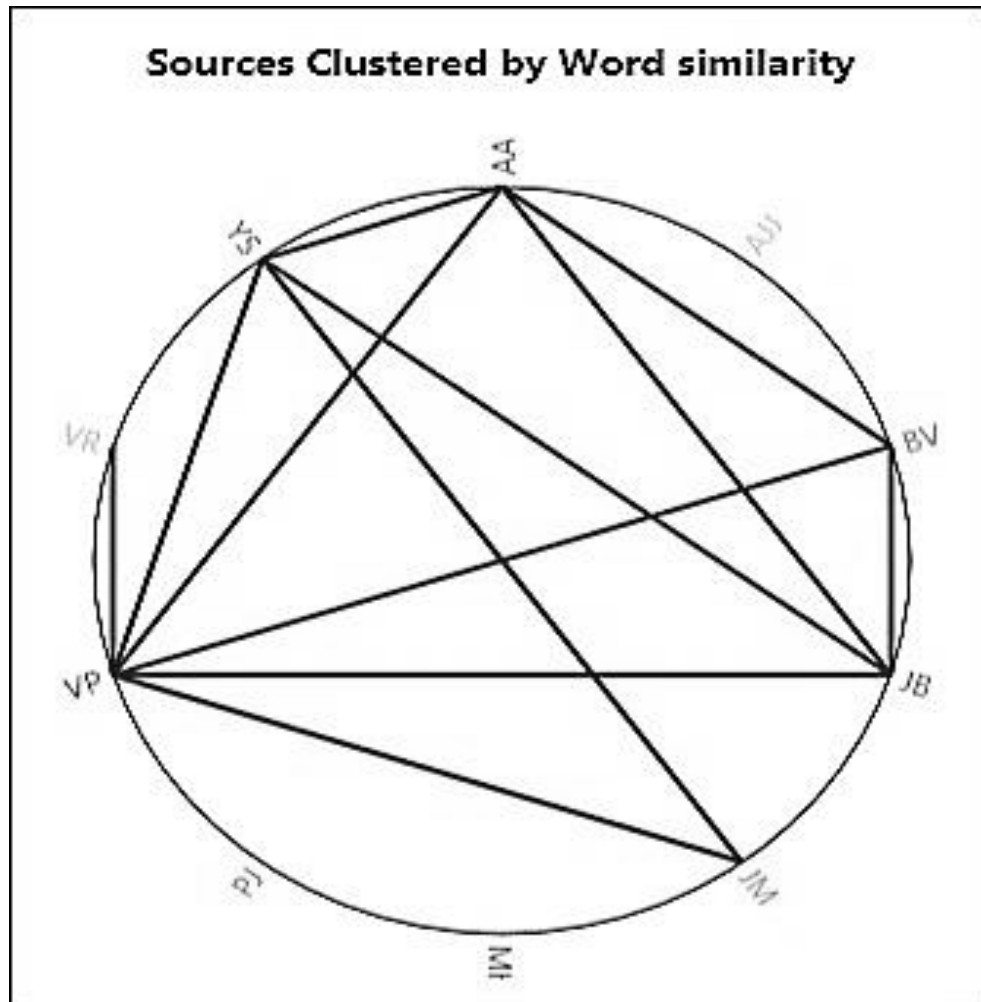
Elite Officers recognized the adverse impacts of low intensity hurricanes on the economy, agriculture, infrastructure and education. Notwithstanding, they neither planned nor budgeted for them. This behavior demonstrated failure to take personal responsibility for addressing low-intensity hurricanes transferring them imaginatively to external agencies including God. LIH were perceived as “Acts of God” and responsibility for safety and security was left to “hope and His goodness.” Government depended, therefore, on external loans and grants to address emergencies ex-post. These did not cover education. Rather, elite officers deprioritized education because instruction could be suspended or reschedule. Physical safety of people that did not expressly include children and people’s property were priority. Connecting children to their parents appear to have been the priority but the mechanisms to so, like evacuation routes and procedures were not in place. Elite education officials believed student, teacher and school safety as priority. Those beliefs were not followed by corresponding actions – policies, plans and budgets that guaranteed their safety. Interviews with school principals as outlined in Section 2.3 confirmed this chasm between assertions about safety and actual action on safety.



### **4.3 INTERVIEWS WITH PRINCIPALS**

Inadequate planning goes into education in emergencies (Sinclair, 2002; INEE, 2010). Emergencies were unanticipated and national governments were often unprepared. Consequently, they overwhelmed government's capacities to address them (Kagawa, 2005). External agencies, non-government organizations (NGO), and international inter-governmental agencies were often at the center of response during catastrophic events. They 1) restored schools temporarily; 2) provided psychosocial support and child-friendly spaces for protection; 3) replaced teaching and learning materials; and 4) instituted programs of recovery for children (Aguilar, 2009; UNICEF & University of Pittsburgh, 2004; Penson & Tomilson, 2007; Sinclair, 2002; Sommers, 2004). These agencies, however, were rarely present during low-intensity hurricanes in Dominica.

Overall, results of interviews with eleven school principals who experienced Hurricanes Dean and Ophelia in Dominica showed low intensity hurricanes had damaging effects on schools, responses were selective and in some cases, delayed. Response activities, like student evacuation, were left to principals and their school communities. These principals, however, lacked the training, guidance, skills and support required for effective response. As a result, they and their students were left vulnerable particularly to Hurricane Ophelia. Word similarity analysis showed there was thematic consistency across principals' interview responses confirming most had similar experiences with LIH or used similar vernacular to describe them. Figure 21 shows the clustering of these word similarities by sources of interviews



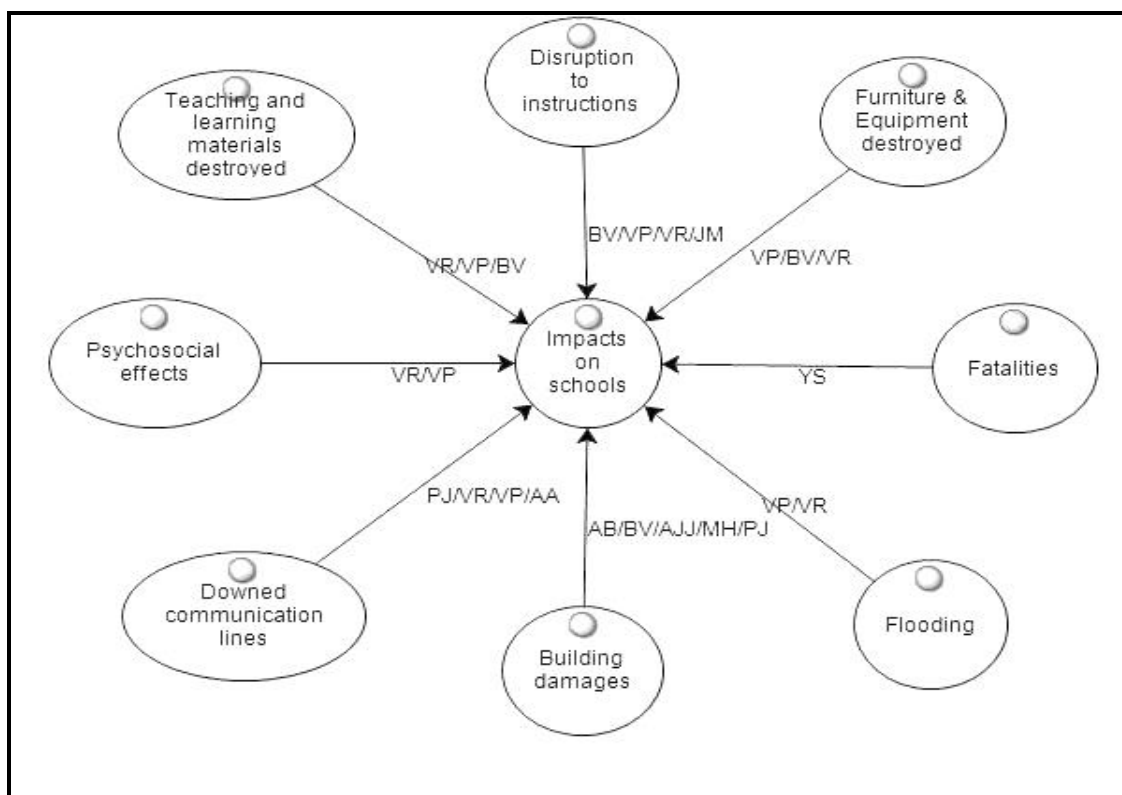
**Figure 21.** Principals Interviews Clustered by Word Similarity, Dominica

Principals were asked to 1) assess the impacts of low-intensity on education; 2) timeliness and effectiveness of responses; and 3) the role Ministry of Education played in reducing impacts. Figure 14 showed three outliers and possibly thematic inconsistency – PJ, PM and VR. This may be so because only Hurricane Dean affected all three. Both Hurricanes Dean and Ophelia affected the others. Unlike the other principals, all three were satisfied with the timeliness and effectiveness of responses. Further, non-public sector agencies handled responses in two of these cases and the third suffered minimal damage. The next three themes deal with responses from these eleven principals beginning with the damaging impacts of LIH on schools.

#### **4.3.1 Theme 7: LIH had damaging impacts on schools**

Disasters destroy school buildings, learning materials, and disrupt educational access and participation for large number of students (Sinclair, 2002; Sommers, 2002, 2003, 2004). They lead to fatalities; are traumatic for children and their teachers, and affect student academic performance (Holmes, 2002, Joseph, 2006; Machel, 1996; Pane, McCaffery, Karla & Zhou, 2008, Sommers, 2009). Interviews with principals confirmed some of these impacts for two low-intensity hurricanes: Hurricanes Dean and Ophelia.

As a precursor to assessing response times and efficiencies during Hurricanes Dean and Ophelia, principals were asked to identify the impacts of these two hurricanes on their schools. Figure 22 is an NVIVO 9 thematic model of their responses. Arrows are labeled by interviews.



**Figure 22.** Impacts of LIH, Dean and Ophelia on Schools, Dominica<sup>39</sup>

Impacts were categorized as: 1) fatalities, 2) destruction to school infrastructure and related facilities, 3) the destruction of school materials, 4) disruption in instruction and 5) psychosocial effects. These are shown in Table 12 for ease reference.

**Table 12.** Impacts of LIH on Education Categorized by NVIVO Nodes or Themes

<i><b>Fatalities</b></i>	<i><b>Destruction of infrastructure &amp; related facilities</b></i>	<i><b>Destruction of school materials</b></i>	<i><b>Disruption to instruction</b></i>	<i><b>Psychosocial Effects</b></i>
Parent Teachers Association (PTA) Secretary and son died	Building damages (doors, windows, roofs)	Damaged teaching and learning materials (books)	Instruction days lost	Student trauma

<sup>39</sup> The arrows are labeled using unique identifiers (PJ/VR/AA) to depict the sources.

TABLE 12  
(Continued)

Downed communication lines	Destroyed furniture, and computer equipment
Flooding of libraries and classrooms, computer rooms	

Frequency of principals' responses to questions on impacts is recorded in Table 13.

**Table 13.** Frequency of Respondents' School Affected by Hurricanes Dean and Ophelia, Dominica

<b>Impacts</b>	<b>Schools Affected</b>
<b>Building damages</b>	5
<b>Downed communication lines</b>	4
<b>Disruption in Instruction</b>	4
<b>Teaching material destroyed</b>	3
<b>Furniture and equipment destroyed</b>	3
<b>Psychological effects</b>	2
<b>Flooding</b>	2
<b>Fatalities</b>	1

As shown in Table 13, most schools experienced building damages, downed communication lines and disruptions to instructions. There were two fatalities, as well as possibly psychosocial effects as a result. Theme 8 explored how these impacts were addressed.

#### **4.3.2 Theme 8: Multiple actors**

Key priorities areas in education during emergencies have been to establish a sense of normalcy for children by returning them to routine schooling as quickly as possible and reduce the psychological impacts of disasters on them (Kagawa, 2005; Pigozzi, 1999; Sinclair, 2002). Effective responses, protection and psychosocial support for children are essential aspects of

response (Aguilar & Retamal, 2009; Gates & Reich, 2010; Smith & Vaux, 2003). This section attempted to determine the urgency of responses. Principals were to identify actors who addressed the impacts of these hurricanes on their schools, the response-time and their satisfaction.

They identified multiple actors including the Ministry of Education involved in addressing Table 14 lists these agents and the frequency with which respondents credited them.

**Table 14.** Agents who Addressed Hurricane Impacts on Education, Dominica

<b>Agents who addressed impacts</b>	<b>Frequency of response</b>
<b>Ministry of Education (MOE)</b>	4
<b>Part MOE</b>	1
<b>Others (schools, parents, communities &amp; Local Government)</b>	3
<b>Non-response</b>	2

Four principals credited the Ministry of Education with addressing impacts fully; one principal credited the Ministry of Education in part; three credited others and two principals did not respond (see AA; AJJ; PJ; BV). Two external agencies (NGOs) with local operations in Dominica were involved in building repairs according to contract document but principals were unaware and could not have included those as agents who addressed LIH. They worked through the Ministry of Finance and Ministry of Education.

The Ministry of Education addressed damages to buildings and related facilities (AA; AJJ; PJ; BV). These were repairs to window, doors and roofs. Schools, parent, communities and local government addressed the non-infrastructure impacts (AA; AJJ; VR; VP, MH; JM; JB). These were: 1) the funeral arrangements for the two victims, 2) evacuation of students, 3). replacement of learning and materials, like books and computers, and 4) providing psychosocial

support for students and teachers. No one addressed the instruction days lost as a result of these emergencies, neither were there edicts, policies or mandates in place to address them.

Principals' assessment of timelines did not always correspondent with documentary evidence. Most principals believed repairs were completed in one month. One said one week, another said within a month and still another said within 5-6 months. Review of a progress report on the school repairs following Hurricane Dean, however, showed that by 12 September 2007, roughly one month after Hurricane Dean, only two of the contracted works were completed. A copy of this report forms Appendix F. Five of the contracts for repairs had not been signed by then (EPDU, 2007). This study was conducted five years after Dean and could have reduced their ability to recall accurately, in this case.

External agencies (NGOs) financed repairs on both schools where contracts were completed: Digicel, a Telecommunications company and the Caribbean Development Bank Basic Needs Trust Fund (BNTF). Principals' of these two schools expressed satisfaction with the timeliness and level of response. These external agencies had the available resources to effect timely repairs but their involvement confirmed dependence on external funding sources during low-intensity hurricanes (LIH).

As anticipated, principals were less forthright in revealing their satisfaction or dissatisfaction with the manner in which impacts were addressed. Respondent tend to self-efface where they perceive responses may have adverse consequences or appeared to be potentially embarrassing (Tourangeau, Lips & Rasinski, 2001). Two principals expressed satisfaction, one of which was the school where two fatalities occurred. The police and local government, agents external to the Ministry of Education (Godfathers), conducted search and rescue and made funeral arrangements for the two victims.

Nine principals did not respond to the question on satisfaction, two however, expressed their dissatisfaction. One of these opined:

I was dissatisfied with the response we got for Ophelia, probably they should give us more initiative to send the children home a little earlier or just give the principal more initiative. When we see the bad weather then we can take the decision on our own and just start to disperse the children. Call their parents and disburse the children. The argument sometimes is you take a decision and nothing really happens, nothing serious as Ophelia happens. When, um, because I kept calling the church at the foot of the hill and they were reporting to tell me what was happening and they said that the water was on the road and I know children were living around that area. So I knew it was kind of getting very, very serious. So, I think, they should give us more initiative, as though trust us a little more to make decision (VR).

A central aspect of this dissatisfaction was the expectation that as principals, they should have had greater autonomy to make decisions that would have resulted in more timely responses. The centralized nature of educational governance and management did not appear to make that possible. Two other principals shared this concern:

But also I think though, even from the perspective of the Ministry of Education, I don't think, I don't, I am not satisfied that they trusted our judgment enough on the situation although we were on the ground and we saw what was happening. I mean, it has rained in the past and, um, there were times when there was no real concern for us but I remember articulating, "Hi, this is unusual, this is something that we have to attend to; we need to get the children off." I don't believe our personnel took that seriously, maybe because they could not understand what we were seeing on the ground at the time (JB).

The ministry person should be informed of impending dangers and give principal leeway to be able to take decisions when certain things happen; that they do have to call their boss and their boss don't know, and have to, and even allow things to happen at the school because you are waiting for permission from somebody (VP)

Notwithstanding their dissatisfaction, the Chief Education Officer confirmed that principals were responsible, under the Education Act, 1997, for school closures during emergencies when he or the Minister could not be reached. He did not outline the procedures or conditions that would merit making that decision on their own. Normally, under the Act, that responsibility fell to the Minister and Chief Education Officer on advice from the National Emergency Management Organization (NEPO). Principals seemed unaware of that prerogative.



Summarily, Ministry of Education faced challenges while addressing education during LIH. Responses were limited and recovery protracted, in one case for up to 6 months and in another one-year. It was focused on building repairs. External agencies, like Basic Need Trust Fund (BNTF) assisted. Much of the non-repair works, like student evacuation, restoring learning materials, were left to principals who had no official training, guidance and support. Fortunately, most were in communities willing to share their local knowledge on hurricanes and disasters. They advised principals and assisted in evacuation. As Theme 9 will show actions designed to mitigate future impacts did not receive serious consideration.

#### **4.3.3 Theme 9: Mitigation**

Comfort, et al (2004) argued for the need to treat disasters as policy problems and to put policies in place before disasters occur. These pre- disaster policies would include mitigation<sup>40</sup> and preparedness<sup>41</sup>. Principals were asked to discuss what could be done to reduce the impact of education emergencies in the future. Overall, they recommended: 1) mitigation, 2) risk reduction and response strategies, 3) more and appropriate information to improve the manner in which low-intensity emergencies at school are handled. They also recommended: 4) improved location and siting of school buildings to reduce risk and vulnerabilities; 5) development of policies that targets areas prone to disasters, 6) improved communication as disaster events unfolded. Central

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<sup>40</sup> Mitigation are strategies and activities, like adopting and applying building codes and standards designed to reduce the vulnerabilities and risks associated with disasters (Mileti, 1999).

<sup>41</sup> Preparedness involves strategies and activities undertaken before a disaster to reduce loss of lives and property. These include adequate relief supplies, evacuation and drills and exercises (Mileti, 1999).

was the need for greater autonomy at the level of schools to facilitate effective and timely response. Elite officers shared similar sentiments.

Accordingly, to one principal;

From the perspective of the Ministry of Education, I do not believe we have clear cut information that we can follow. You do not know the line of contact in such a situation. So I don't think as a principal, I was really prepared to deal with the situation when it came. I believe this is something principals should be briefed upon. We are dealing with large groups of students, emergency situations may come up. We need to know how we go about dealing with situations when they come. Maybe it should not be left just to the principal, just to decide, this is what I do, you know (JB)

This principal highlighted the absent procedures, information, and poor communication with the Ministry and his lack of preparedness for dealing with Hurricane Ophelia. He did not know how to deal with situations like these and held the Ministry of Education responsible. Two other principals suggested making schools safer for children by locating them away from cliffs and rivers, and erecting retaining structures to manage rock slides, and control flooding and their impacts. One of them expounded:

Building schools in safer zones for children to not have to think about slides. (*Have you considered the terrain of Dominica?*). But we should have put retaining walls in place before the children begin to utilize the building or so to minimize slides or rock falls coming to the school (VR).

One principal spoke about putting a "little policy" in place particularly for those communities and schools prone to disasters like those triggered by Hurricanes Dean and Ophelia. She thought such policies should be targeted and focused on areas prone to disasters. These areas would have to be known. She explained;

So probably there could be one "little policy" for places like C..., not everywhere, when you see, anytime you see, there is the overnight heavy showers especially during those periods when it is hurricane season and so on that once they see overnight it has been raining steadily probably like up to 6:30 - 7:00am just keep their children at home for the day you know but that should not be a general thing because all places like W... without disasters to go and tell people if they see a little

rain do not come to school no but for the disaster prone areas probably like M... too and those areas and so. That is something ministry could do (JM)

Responsibility for establishing this policy would lay with the Ministry of Education as described in the National Disaster Plan (NDP, 2001). Three principals, however, were of the opinion; there was nothing or little the Ministry of Education could have done to mitigate the effects of low intensity hurricanes. They stated;

To be fair, there was nothing! What they could have done? There was nothing! (AJJ)

Nothing! (*Nothing? I retorted*) No! The role of a hurricane, we talking about the actual effect of the storm, the ministry could not do anything, the ministry could not tie the roof. This was the last thing you expected to happen. This building has been there since 1973 you know, saw David and all these hurricanes. This was the last thing (BV).

No, I don't think so. That's an Act of God (MH).

These principals downplayed the Ministry's roles and responsibilities for addressing education during low-intensity hurricanes. Like the elite officers, they perceived disasters as "Acts of God" and therefore beyond its control. Both held similar assertions about disasters. Consequently principals' failed to hold this Ministry or themselves accountable for ensuring staff and student safety during these hurricanes. The absence of relevant policies, plans and budget at the Ministry cascaded to schools, isolated principals and their schools and left them vulnerable to LIH. As they recognized, they were unable to effectively handle the events which unfolded since they lacked appropriate training, awareness and support from the Ministry of Education. Moreover, schools were located in areas that left them vulnerable to floods, rockfalls and landslides associated with low-intensity hurricanes.

#### **4.3.4 Summary of interviews with principals**

Overall, principals' interviews revealed the adverse impacts of chronic low-intensity hurricanes on schools. These included damages to buildings and learning materials, flooding and, possibly psychosocial impacts on students. Principals, however, found responses shoddy and focused mostly on building repairs, with all else left to them and their communities. Few principal expressed dissatisfaction with the extent and timeliness of responses but few expressed satisfaction. The dissatisfied expressed concerns with their lack of training, awareness and guidance for addressing low-intensity hurricanes particularly when communications failed. They were unaware of their legal obligations during these hurricanes and called for greater autonomy which they already possessed legally. Finally, they suggested the use of mitigation strategies that included greater autonomy for decision-making on the ground as disaster events unfolded and putting a "little policy" in place. Notwithstanding, inspection of affected school buildings showed despite repairs and rehabilitations, they remained at-risk and vulnerable to low-intensity hurricanes.

### **4.4 INSPECTION OF SCHOOLS**

Assessing and managing vulnerabilities and risks are critical aspects of social and cultural protections (Dombrowsky, 1981). Schools represent safe places for children. Ensuring school buildings are hurricane safe constitutes an essential component of that safety. Comprehensive retrofitting of school buildings to ensure safe structures was conducted in Dominica in 1998 with

assistance from the Organization of American States (OAS), ECHO and the Government of Dominica (GOCD, OAS & ECHO, 1998). There had no follow-up since. An evaluation of the status of school building maintenance in Dominica found ad hoc maintenance, poor design and construction practices that made most schools vulnerable to the direct and indirect impacts of earthquakes and hurricanes (Consulting Partnership Engineers, 2011). As mentioned, I inspected affected schools buildings to determine whether they were still vulnerable to low-intensity hurricanes after repairs or rehabilitation.

Ten of fifteen<sup>42</sup> targeted school buildings were inspected for adherence to building standards and codes. Overall, inspection showed widespread failure to adhere to key standards and codes in their location, construction, repairs and rehabilitation and facilities. As Theme 10 will show, this resulted in their continued vulnerability and risk to low-intensity hurricanes.

#### **4.4.1 Theme10: Risks and vulnerabilities**

Overall, inspections results showed that during construction and repairs, key building standards, codes and features designed to reduce the vulnerability of school buildings were ignored. There were serious siting problems as well. Schools buildings and facilities were located in areas prone to flooding, landslides, sea surges and damage both from the direct and indirect impacts of low-intensity hurricanes. Roofs, in particular, were found to be susceptible to these gale force winds.

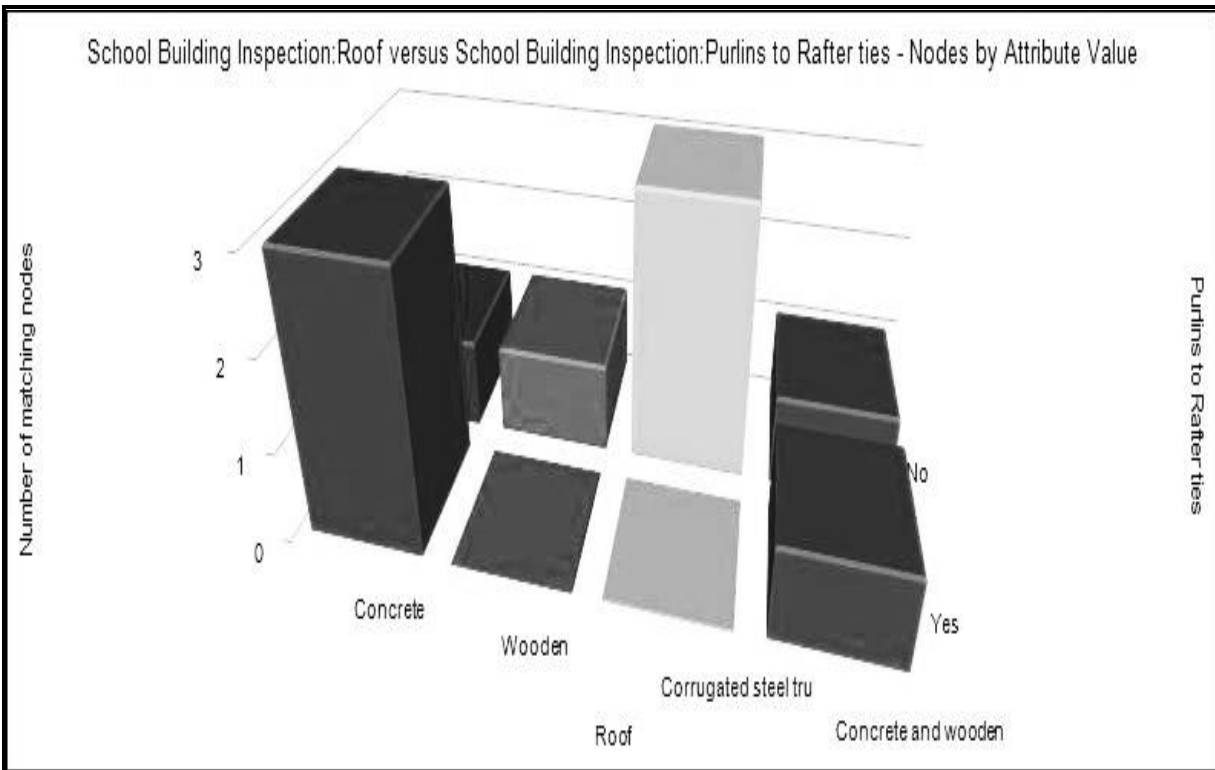
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<sup>42</sup> Five principals either did not consent to participate in this study or were not available for reasons already mentioned – migration, retirement and death.

School roofs inspected lacked key hurricane ties<sup>43</sup> designed to strengthen roof members and secure their integrity as single whole structures. Hurricane ties are specially designed metal plates fastened between roof member cleavages to hold them in place during storms or hurricanes. There are four kinds of hurricane ties – roof to purlin; purlins to rafters; rafter to ring beams and ring beams to walls. As shown in Figure 23, purlin to rafter ties were absent in all but concrete structures. Six of the ten schools inspected had no purlin to roof ties, making those roofs vulnerable to uplift and being blown away by hurricane force winds. This placed equipment, learning materials and furniture at risk for damage or loss as well, as happened in one of the schools I inspected.

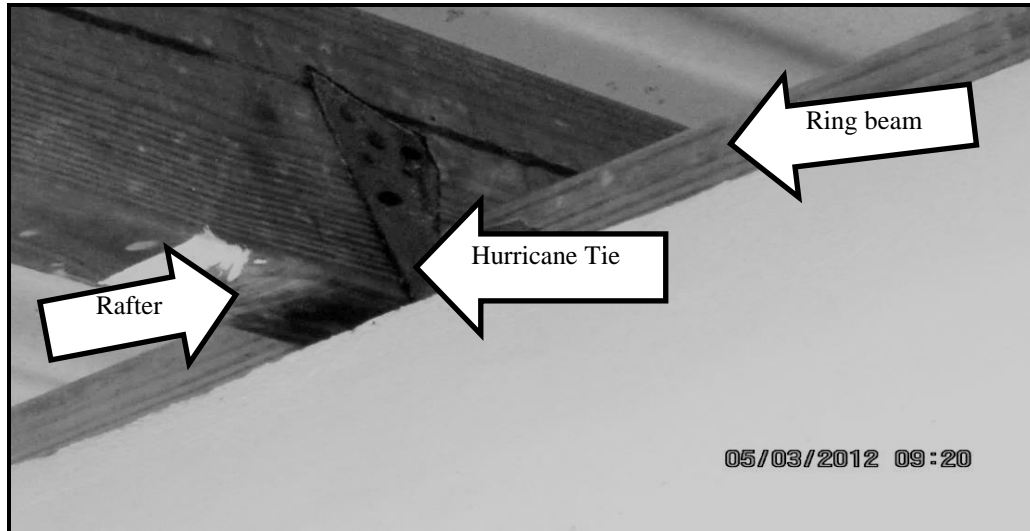
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<sup>43</sup> Hurricanes ties are metal plates affix to roof members to reduce vulnerabilities to winds and to help the roof function as a “single” structure. Roofs are susceptible to uplift and being blown away by hurricane force winds as a result of the conventions they generate. Making sure they are fastened securely reduces the likelihood.



**Figure 23.** Purlin to Roof Hurricane Ties by Roof types in Selected School Buildings, Dominica

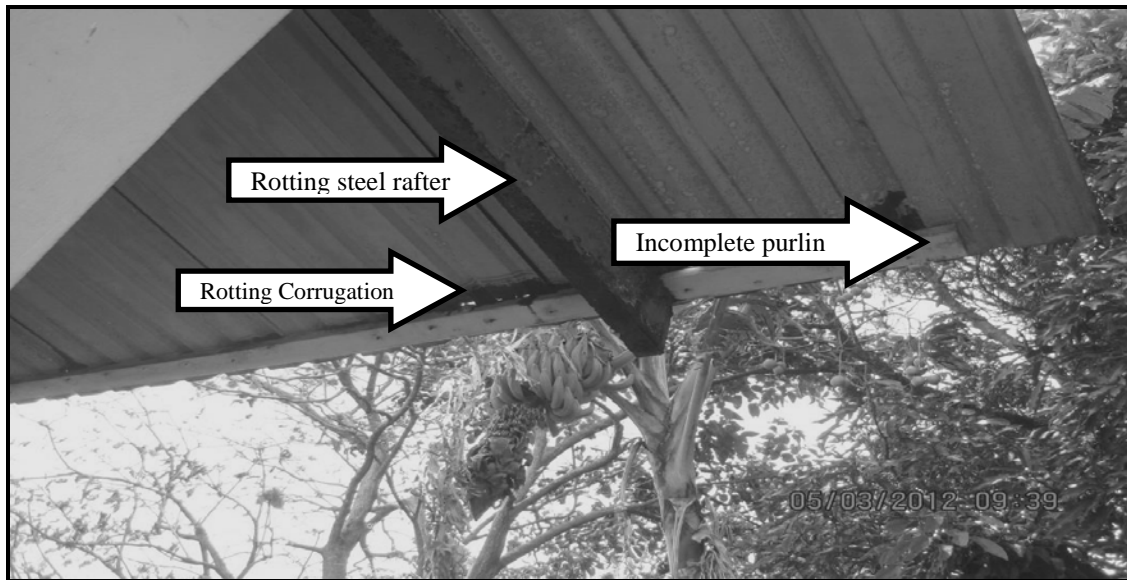
The absence of these purlins in at least one roof member whether ring beams to rafter; rafters to purlins or purlins to roofs left the entire roof vulnerable. Figure 24, for example, shows a roof with ring beam to rafter hurricane tie but there were no rafter to purlin ties leaving the roof above the rafter susceptible to hurricane uplift.



**Figure 24.** Ring-beam to Rafter Hurricane Tie in a School Building

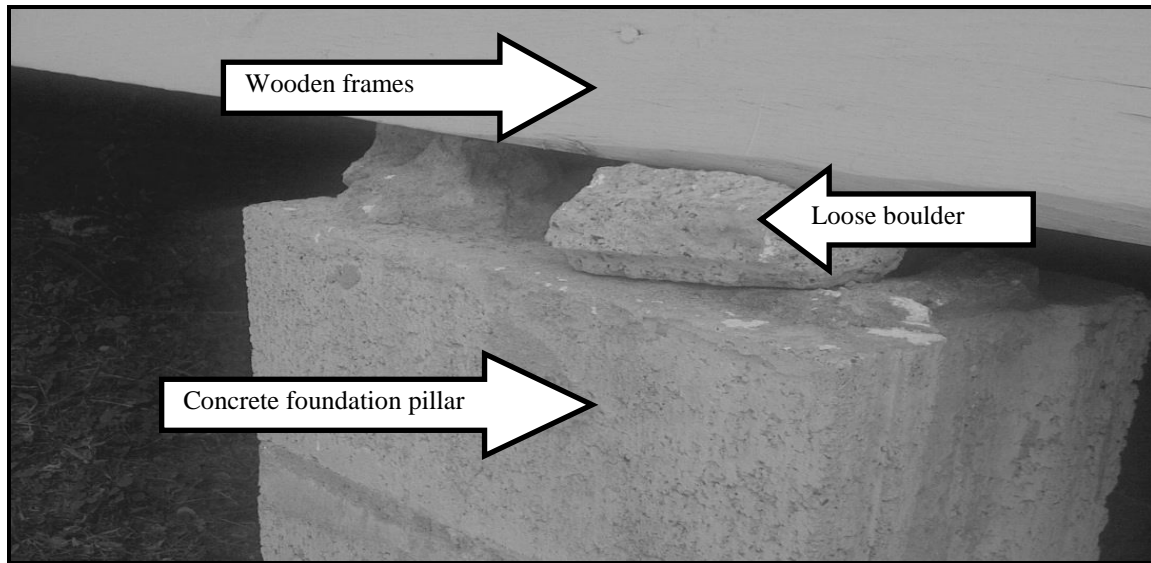
Where hurricanes ties existed, in some cases the corrugated sheeting used to cover non-concrete structures revealed several vulnerabilities. Purlins did not extend to the full length of the corrugation leaving portions dangling. There were no facie boards against which to fasten the side edges of these corrugated sheeting to reduce uplift. One third of the school roofs inspected had these shortcomings. Figure 25 shows rotting corrugation, rotting metal rafter; incomplete purlins that did not extend the full length of the corrugation sheeting which was left dangling in that school. Corrugation sheets in three of the wooden roofs I inspected were fastened with simple nails. Screws rather than nails tend to hold better during hurricanes. Originally, these were members of steel-framed buildings constructed in the 1970's. Age and successive renovations, according to one principal, compromised the integrity and strength of these steel members.





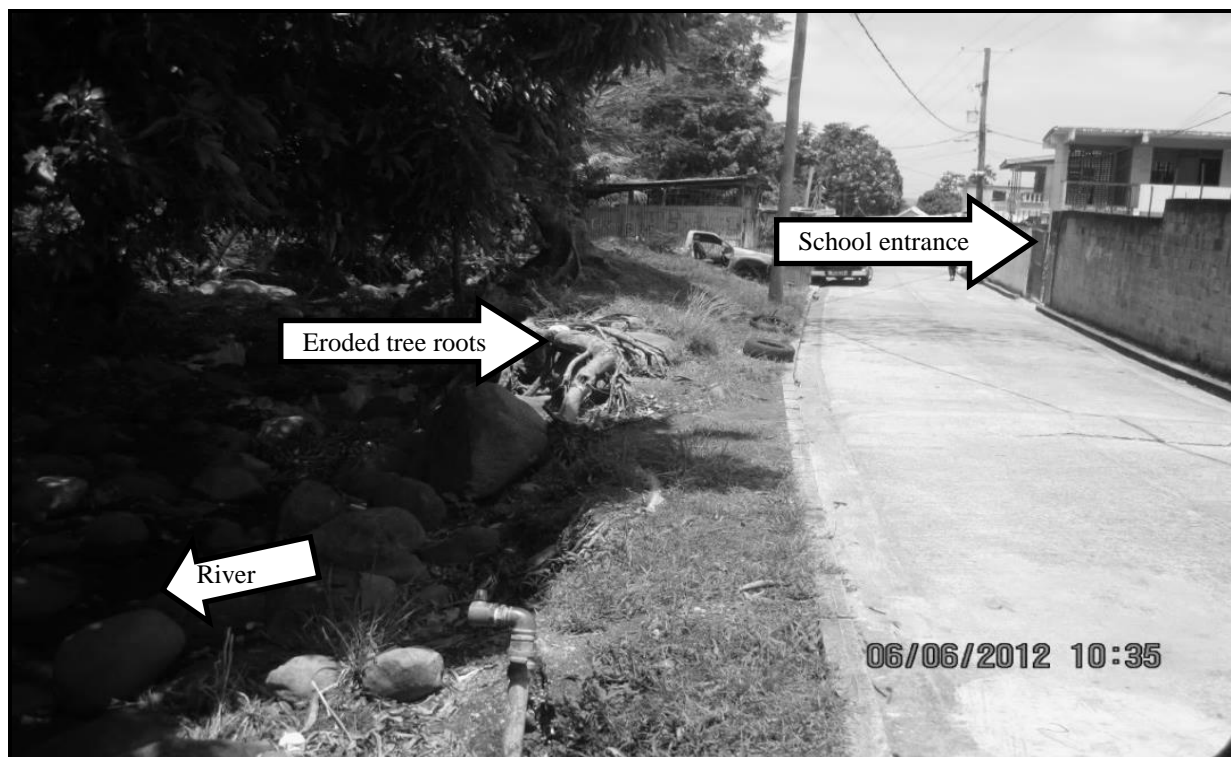
**Figure 25.** Key Roof Vulnerabilities in a School Building, Dominica

Entire classrooms were also found to be vulnerable to toppling during hurricane force winds because in some cases they were left unattached to their foundations. Figure 26 shows the shoddy foundation works on one wooden temporary classroom at one of the inspected schools. The structure was left suspended above its foundation pillar. Loose stones or rocks were used to fill the breach.



**Figure 26.** School Flooring Unattached and Unsecured to Foundation Pillar, Dominica

Two other types of vulnerabilities were observed: schools were located close to rivers and stream, and essential facilities were located on ground floors making them susceptible to flooding during hurricanes. Figures 27 and 28 depict a school which experienced severe flooding, and where students and teachers were trapped for several hours before being evacuated by the fire and ambulance services during Hurricane Ophelia. The exposed tree roots in the center of Figure 27 marks the river entry point unto the only access road to the school. It also shows the school entrance through the flood waters entered its compound. That school was flooded with four feet of water. It destroyed the library and books. The library was re-painted and its floor re-tiled in August 2012, nearly one year after Hurricane Ophelia.



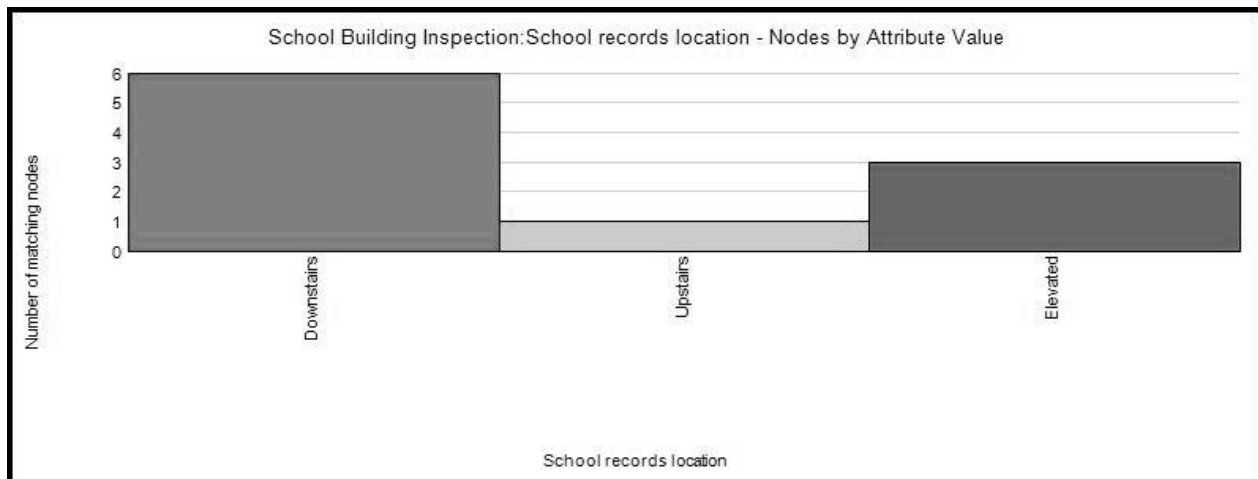
**Figure 27.** Close Proximity of School to River, Dominica

In this case, the school grounds, classrooms and library were located on the ground floor as shown in Figure 28.



**Figure 28.** School and Library Flooded during Hurricane Ophelia, 2011, Dominica

School records were also vulnerable mainly because of their location and storage method. Of the ten schools inspected, six had their records located downstairs or the ground floor, two on elevated ground (elevated) floor levels and one on the upper floor (upstairs) as shown in Figure 29. No school inspected had more than two floors.



**Figure 29.** Location of Records in Inspected Schools, Dominica

School records were mostly stored in paper files or jackets, placed on open wooden shelves or metal cabinets where roof members were vulnerable to uplift during low intensity hurricanes. These records were at risk therefore, for damage or destruction during low-intensity hurricanes. Figure 30 shows the storage of records at one school. As can be seen, they were stored in paper file jackets, placed on wooden shelves and covered with curtain-like cloth fabrics. Interestingly, this school like all schools in this study had an equipped and functional computer room which could have been used to store data and information. Paper-based files would still be required but their security and safety could have been improved.



**Figure 30.** Storage of School Records and their Vulnerability to Hurricanes, Dominica

#### **4.4.2 Summary of school inspections**

In summary, school inspections revealed the prevalence of repairs and construction works that did not adhere to building codes and standards. Roof members were vulnerable to damage from low-intensity hurricanes because most did not possess hurricane ties. In some cases, temporary classrooms were not attached to their foundations. Inspected schools facilities were vulnerable to flooding because they were located close to rivers and cliffs. School records were not securely stored. They were located on the ground floors and were at risk for damage from flooding. School records were also at risk for damage where school roofs were at risk for damage. Table 14 summarized the study findings as captured under each of the themes which emerged from this study.

**Table 15. Summary of Findings**

<b>Data Collection Methods</b>	<b>Purpose</b>	<b>Emergency themes</b>	<b>Evidence</b>	<b>Findings</b>
Review of official documents	To identify documented policy statements and positions using key words and themes	<b>Theme 1:</b> Risk and vulnerabilities  <b>Theme 2:</b> Contingency & Vulnerability funding  <b>Theme 3:</b> Weak institutional capacities	<ul style="list-style-type: none"> <li>• GSPS 2006</li> <li>• GSPS, 2012-2014</li> <li>• GSPS 2006,</li> <li>• GSPS, 2012-2014</li> <li>• GSPS, 2006</li> <li>• GSPS, 2012-2014</li> <li>• NDP, 2001</li> <li>• Government Information Service, 2012</li> </ul>	<ul style="list-style-type: none"> <li>• Government understood the need to move toward risk and vulnerability as mitigation but framed policy in non-committed language of response and recovery</li> <li>• Proposed the establishment of contingency and vulnerability funds but weak policy commitment language</li> <li>• No direct funding policy for education in emergencies</li> <li>• Ministry of Education (MOE) was not a primary agency</li> <li>• MOE held membership in several NEEC Task Forces that were unrelated to education</li> <li>• No institutional presence for education during LIH within Ministry of Education</li> </ul>
Elite interviews	To identify the policy perspectives, roles and responsibilities of senior public officers in addressing low intensity education in emergencies	<b>Theme 4:</b> Adverse impacts on education and limited policy responses  <b>Theme 5:</b> External financing  <b>Theme 6:</b> Education is deprioritized during education in emergencies	<ul style="list-style-type: none"> <li>• Elite Interviews: RE, KJ, EL, FP, EC, &amp; RR,</li> <li>• Budget estimates, 2004 – 2012</li> <li>• Elite Interviews: RE, KJ, EL, FP, EC, &amp; RR,</li> <li>• Elite interviews: RE &amp; KJ</li> <li>• SH &amp; MP</li> </ul>	<ul style="list-style-type: none"> <li>• Low intensity hurricanes damages school buildings, and disrupting education, as a result of</li> <li>• Education is priority in annual budgetary allocations but is not during LIH expect for repairs to damaged buildings</li> <li>• Contingency funds for addressing low-intensity hurricanes did not exist.</li> <li>• Loans, grants and transfers were main funding strategies resulting in increased indebtedness.</li> <li>• MOE transferred funds from planned to emergency activities but for social assistance and damage repairs.</li> <li>• Safety of people and safety of property were priority.</li> <li>• Education was not prioritized.</li> <li>• MOE stated education was priority for them</li> </ul>
Interviews with	Assess the	<b>Theme 7:</b>	<ul style="list-style-type: none"> <li>• Principals:</li> </ul>	<ul style="list-style-type: none"> <li>• Window, doors and roofs, learning</li> </ul>

TABLE 15  
(Continued)

principals	experiences with and perspectives of principal on two low intensity Hurricanes; Dean (2007) & Ophelia (2011)	<p>Damaging impacts on schools</p> <p><b>Theme 8:</b> Multiple actors</p> <p><b>Theme 9:</b> Mitigation strategies</p>	<ul style="list-style-type: none"> <li>Principals <ul style="list-style-type: none"> <li>AA</li> <li>JB</li> <li>VP</li> <li>VR</li> </ul> </li> <li>Principals <ul style="list-style-type: none"> <li>VR</li> <li>JM</li> <li>JB</li> </ul> </li> </ul>	<p>materials and equipment were destroyed</p> <ul style="list-style-type: none"> <li>Psychosocial impacts on students and teachers.</li> <li>MOE responses were mainly repairs to buildings.</li> <li>Principals and their communities took care of all else including psychosocial support and evacuation</li> <li>Principals lacked information, guidance and support during and after those hurricanes</li> <li>Principals had to depend on the experience of communities and were indecisive and may have increased safety risks for student</li> <li>Principals argued for increased mitigation including locating schools away from rivers; Increased information, communication, guidance and policies for addressing education in emergencies</li> </ul>
School building inspections	To assess location and siting of schools and adherence to building codes and standard in the repairs and rehabilitation of school buildings	<b>Theme: 10</b> Persistent risk and vulnerabilities	<ul style="list-style-type: none"> <li>6 schools had no purlin to rafter ties</li> <li>10 schools &lt;300ft from ocean</li> <li>5 schools &lt; 100ft from ocean</li> <li>5 schools within 5ft of cliffs</li> <li>8 school had records located downstairs/ elevated downstairs</li> <li>10 libraries and 9 computer room located downstairs or elevated downstairs</li> </ul>	<ul style="list-style-type: none"> <li>Building codes and standards were not adhered to during repairs and rehabilitations</li> <li>Risk and vulnerabilities of buildings and facilities persisted.</li> <li>School records were vulnerable to low intensity hurricanes because of open storage.</li> </ul>

## **5.0 DISCUSSION OF FINDINGS**

Low intensity hurricanes (LIH) affected and disrupted education in Dominica. They are a serious and chronic problem for which appropriate policy solutions have to be devised. Documents reviews, interviews and building inspections conducted in this study confirmed the chronic and recurring nature of these hurricanes and their effects on education and schools. They were fatal, damaged school buildings and destroyed learning materials and equipment. In turn, they disrupted schooling both before and after they made landfall, since most schools are emergency shelters. They were possibly traumatic, therefore, for teachers and children.

Based on a complex set of policy, financial and institutional failures, Dominica and in particular the Ministry of Education did not have in place frameworks and proactive approaches to sustainably and effectively address these LIH. Dominica relied instead on “Band-Aid” or “quick-fix” responses and recovery that only addressed repairs to damaged school buildings. What is required is a type of “life-style shift” or adapted developmental approach in which low-intensity hurricanes are incorporated into educational policies, plans and budgets for vulnerability and risk reduction. Government emphasized vulnerability and risk reduction approaches to LIH in the documents I reviewed. Its assertions surrounding these approaches appear to be compatible with current thinking on addressing LIH, that is, preparedness and



mitigation. Actions on the ground, however, as elite public officers and school principals described them, did not reflect vulnerability and risk reduction but response and recovery.

In the four chapters which follow, I returned to the topic question: how does the government of Dominica address education during low intensity hurricanes (LIH)? This will guide the general discussion as I outline government's ways and means for addressing LIH as an education policy issue. Here, I organized this discussion around the ten themes identified earlier and the information they provided for answering this question. I will also return to the epistemological foundations of this study: the pragmatic paradigm.

Using pragmatism, I identified and discussed government's assertions, their actions, and the consequences and alternatives to these actions. The objective was to paint a portrait and critique government's approach to addressing education during LIH in Dominica. I began with the documented policies, and then followed on with themes on the roles, responsibility and perceptions of elite officers on the issue. I then discussed the perceptions and experience of school principals and closed with my own building inspections to ascertain whether vulnerabilities existed after repairs and rehabilitations. These are organized into the next four chapters which follow: 1) documented policies, 2) elite officers' perceptions and assertions, 3) principals' experiences and 4) researchers observations.

## **6.0 DOCUMENTED POLICIES**

Official policies specific to addressing education during low-intensity hurricanes (LIH) in Dominica did not exist. What I found were policies and pronouncements about disasters in general. There was no single policy document devoted to addressing disasters either. These were scattered throughout official documents and speeches I reviewed. These reviews uncovered three major themes: 1) vulnerability and risk reduction; 2) vulnerability and contingency funding; and 3) limited and weak institutional capacity.

None of these themes made specific references to education during LIH. It was reasonable to expect, however, that they would include education, because national governments are responsible for national security, safety and protection. Consequently, they are the principal agencies responsible for overall disaster management in developing countries (Ahrens & Rudolph, 2006; Freeman & Kunreuther, 2002; Khan & Rhaman, 2007; Luchi & Esnard, 2008; Osei, 2007; Sinclair, 2002). National governments were responsible as well, for establishing the legal, policy and plan frameworks to address disaster preparedness, mitigation, response and recovery (Aldunce & Leon, 2007 and Chhetri, 2001). In the case of Dominica, government is responsible for disaster management and the National Development Plan 2001 outlined its roles and responsibilities which have been devolved to several agencies, including the Ministry of Education. Section 6.1 discusses the documented vulnerability and risk reduction policies.

## 6.1 THEME 1: VULNERABILITY & RISK REDUCTION POLICY

The official documents I reviewed, specifically, the Medium Term Growth and Social Protection Strategies 2006; 2012-2014 and the annual Budget Addresses, 2005/06; 2007/08; 2009/10; 2011/12 & 2012/13 demonstrated Government's desire to adopt vulnerability and risk reduction approaches to manage disasters. The Medium Term Growth and Social Protection Strategy (GSPS) 2012-2014 for Dominica stated "*Government will reduce **environmental vulnerability** and improve **disaster prevention and management** through a combination of **risk reduction**, **impact mitigation** and other measures.*"

The terms "*reduce environmental vulnerability*," "*improve disaster prevention*" were outcomes while "*risk reduction*" and "*impact mitigation*" and as used in this statement were strategies. This policy statement seemed, therefore, to be in line with approaches recommended internationally. Policy statements that addressed contingency funding, however, focused on response and recovery and not vulnerability and risk reduction. Contingency funding had, "*to cover the cost of **repairs** and environmental enhancements necessary, **after** such environmental mishaps.*" "*Repairs*" and "*after*" are ex-post terms as opposed to vulnerability and risk reduction which are ex-ante terms.

Vulnerability and risk reduction, like retrofitting buildings, conducting emergency drills and exercises has become the new and emerging focus of long-term disaster prevention and management. They have been incorporated into the lending terms and conditions of development banks as an adaptive mechanism to sustainably address emergencies and disasters in developing countries (ADB, 2008; CDB, 2009; Freeman, n. d.; World Bank, 2006). In addition, focus on vulnerability and risk reduction has been better investment than response and recovery. One

dollar spent on risk reduction resulted in seven dollars savings on response and recovery (ADB, 2008).

The chasm between this espoused vulnerability and risk reduction approach and the response and recovery approach-in-use revealed government's challenge in adopting the expert-recommended approaches versus its perception of disasters as "Acts of God." The earliest and continuing usage of disasters as "Acts of God" framed them as divine retribution for human misdeeds and failings, and being divine, difficult to prevent and mitigate (White et al, 2001). One elite officer espoused that perception: According to her "we just go and hope this year would be a good year and God would be good to us" (FP). This fatalistic perception of disasters as "Acts of God" underscored the failure to accept responsibility at the policy level for their impacts; instead transferring blame and accountability to an untouchable deity. This demonstrated an accepted inability or a learned helplessness in mitigating the effects of LIH mishaps.

Principals' perception of LIH reflected this helplessness. When interviewed, they indicated there was "*nothing*" the Ministry of Education could have done to alleviate the impacts of LIH on education and schools. The failure to put in place even low cost vulnerability and risk reduction policies, like evacuation routes is affirmed by the reluctance of school principals to hold the Ministry of Education responsible for education during LIH. Martinet (2002, p. 9) explained this reluctance to accept responsibility for disasters:

According to Steinberg those in positions of authority from politicians and business leaders to state officials and federal elected and appointed officials (not to mention any government agencies) use the terms 'acts of God,' 'forces of nature,' and 'freak events' to distance themselves and their organizations from any complicity and responsibility for building (or permitting) homes in high hazard areas. Using these terms, places blame for a disaster clearly outside of human control, or so they would have it.

Analysis of interviews suggested that LIH were often the result of political and managerial failures (see Boin, Rosenthal & Comfort, 2001). These failures have been due less to the direct impact of disaster events themselves and more to the failure to put in place social and cultural disaster protections: understanding, interpretations, attitudes, perceptions and behaviors (Dombrowsky, 1981).

Summarily, in theory, government's policy positions appeared to mirror expert-recommended approaches to disaster management in general. In practice, however, what happened was mostly response and recovery. In reality, not much was being done policy-wise or at the practice level to actually prevent or mitigate the impacts of LIH on education. This reflected failure to accept responsibility for disaster outcomes because they were being perceived as "Acts of God" at both levels: policy and practice. Simple drills and exercises, SOPs and safety steps to reduce accidents and casualties at schools were not in place, and evacuation routes to move children safely out of harm's way did not exist. Further, as Section 6.2 will show, there has been tentative commitment to put contingencies in place to begin to seriously address LIH.

## **6.2 THEME 2: VULNERABILITY AND CONTINGENCY FUNDS**

Disasters were also the function of people's responses (Boin, Rosenthal & Comfort, 2001). I found a general failure to commit to making available adequate and sustainable funds for addressing low-intensity hurricanes (LIH). Two factors underscored that finding. 1) The non-binding vernacular used to rationalize the establishment of disaster vulnerability and contingency

funds; and 2), the expressed policy of dependence on external funding to either establish or supplement proposed local funding, in particular, vulnerability funding.

### **6.2.1 Vulnerability funding**

With respect to the vulnerability fund, for example, the Medium Term Growth and Social Protection Strategy Document (2006) stated, “*The Government of the Commonwealth of Dominica will explore.*” The objective was to “*explore*” the establishment of this fund. The use of the word “explore” implied “search” and “investigate,” and does not connote commitment. There were no guarantees and assurances for its establishment, and as a result there seemed to have been no accountability mechanisms. The same is true for the proposed contingency funding

### **6.2.2 Contingency funding**

The policy vernacular for the contingency fund was also non-binding. In this regard, the Medium Term Growth and Social Protection Strategy document (2012-2014) stated, “*As soon as it is deemed feasible, the Ministry of Finance will set aside 5% of the Public Sector Investment Project for purpose of starting a fund*” and further, “*efforts will be made to supplement the resources*” for this fund.

The terms “*as soon as it is deemed feasible*” and “*efforts will be made*” are non-binding and exploratory terms. They demonstrated a lack of commitment at the local level to sustainably address LIH. One elite office believed indecisiveness, lack of cooperation and collaboration at line ministries’ level were undermining the establishment of these funds (FP).

Notwithstanding, where they existed, contingency funds had been inadequate for addressing disasters in developing countries. They have had to be supplemented with external funds or other local funds diverted from planned activities (Linnerooth-Bayer & Mechler, 2007; Price and Mihir, 2009). Increasingly, this “dependence on external funding,” approach would have to be replaced with local funding initiatives in response to frequent low-intensity hurricanes (LIH). Dominica would have to accept greater responsibility therefore, if not for some of the impacts, but certainly for reducing their likely impacts in the first place.

Government demonstrated commitment to funding catastrophic hurricanes but did not show similar commitment to funding LIH. In 2011, it contributed \$1.9 million to the Caribbean Catastrophic Risk Insurance Facility (CCRIF) (FP) but reneged on the establishment of proposed vulnerability and contingency funds contained in key policy documents. The CCRIF is a “parametric insurance facility”<sup>44</sup> that involved risk-pooling for catastrophic events (CCRIF, 2012). In the case of hurricanes, that is Category 3 or higher on the Saffir Simpson Scale. It does not cover LIH despite Dominica’s vulnerability.

Binding policy language that holds key disaster agents and agencies accountable is required. The institutional weaknesses and proposed improvements described in the official documents I reviewed meant the institutional advocacy required to ensure government’s commitment was not available. Theme 3 in section 6.3 discusses these weaknesses.

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<sup>44</sup> The CCRIF is the first multi-country risk pool in the world, and is also the first insurance instrument to successfully develop a parametric policy backed by both traditional and capital markets. It is a regional insurance fund for Caribbean governments, designed to limit the financial impact of catastrophic hurricanes and earthquakes by quickly providing financial liquidity when a policy is triggered ([http://www.ccrif.org/sites/default/files/publications/Brochure\\_HurricaneEarthquakeEmergencyFunding.pdf](http://www.ccrif.org/sites/default/files/publications/Brochure_HurricaneEarthquakeEmergencyFunding.pdf)).

### **6.3 THEME 3: LIMITED AND WEAK INSTITUTIONAL CAPACITY**

The institutional capacity available to address disasters in Dominica was inadequate and ineffective. First, the National Emergency Planning Organization (NEPO) and the Office of Disaster Management were described as falling short of their mission and objectives of preventing, mitigating and preparing for potential disasters in Dominica (GSPS, 2006). Second, there was no education task force at the national level designed to address education during LIH. Third, despite being assigned responsibility for education during disasters, the Ministry of education had nothing in place to meet its obligations; and fourth, schools in turn had not developed the capacity for addressing LIH at their plant level. This theme discusses capacity at the national, ministerial and school levels.

#### **6.3.1 Capacity and disaster management at the national level**

The National Emergency Planning Organization (NEPO) and the Office of Disaster Management (ODM) were government agencies responsible for managing LIH in Dominica. They, however, were failing to meet their mission and objectives. At the time, they fell under the portfolio of the Ministry of National Security (MNS) and the chairmanship of the Minister responsible for National Security. It was recommended that: 1) NEPO became a Prime Ministerial responsibility, 2) the ODM relocate to the Prime Minister's Office and upgrade its staff, and 3) develop disaster policies and plans and undertake timely and orderly evacuations (GSPS, 2006).

Dominica however has been slow to enact these proposed actions and decisions. Six year after the initial dissatisfaction expressed in 2006, the Government of Dominica's Medium Term



GSPS (20012-2014) still conveyed the need to improve Dominica's capacity for managing LIH. Specifically, this included; 1) developing disaster management policies and plans; 2) conducting timely and orderly evacuation; 3) undertaking extensive public information and education programs; and 4) execute extensive mitigation (GSPS, 2012-2014). Based on personal observations of meetings I attended in May, 2012, NEPO was still being chaired by the Minister responsible for National Security. In addition, the Prime Minister of Dominica expressed dissatisfaction with the attitudes of NEPO officers in preparing for the 2013 hurricane season (GIS, 2012).

While NEPO and the ODM continued to fall short of their mission and objective, an even more serious failure had been the inability to fully reform them after six years. At the national level, therefore, the organizational capacity required to address disasters including LIH were inadequate and ineffective. The policy proposal to bring the management of disasters and low-intensity hurricanes under the Prime Minister's direct portfolio was to correct these problems. This decision, however, was not without precedence and adverse consequences. Jamaica, for example, decided to bring disaster management under the portfolio of the Prime Minister but that arrangement undermined the credibility and performance of the Office of Disaster Preparedness and Emergency Management (ODPEM) (Osei, 2007). These capacity impasses at the national level have cascaded to the ministerial level.

### **6.3.2 Capacity at the MOE level**

Institutional failures at the national level resulted in corresponding failures at the Ministerial level. The Ministry of Education (MOE) had been assigned specific and important roles and

responsibilities for education during disasters. They included enforcing drills, selection and maintenance of schools as emergency shelters and disseminate information on Standard Operation Systems (SOP) to educational institutions. These are essential since education is considered the fourth pillar of humanitarian response (Aguilar and Retamal, 2009, Pigozzi, 1996).

Despite these assigned roles, the Ministry of Education was not a designated primary disaster management agency in Dominica (see NDP, 2001). Rather, it was a secondary agency with membership assigned in five separate National Emergency Executive Committee (NEEC) Sector Task Forces namely economic instability, refugee handling, shelter inspection, shelter management and public information and education. None of these agencies and their responsibilities was education-related, sidelining the Ministry of Education's roles and responsibilities. As a result, it did not have in place the institutional structures and procedures to fulfill these assigned roles and responsibilities. These were not assigned to any of its technical units. How serious then has the Ministry of Education been in addressing LIH, meeting its obligations under the NDP, 2001 or the safety and security of students in its care?

The Education Act, 1997, the legal instrument and key policy document governing education made only a single reference to hurricanes. Section 34(1) of the Act made the Minister and Chief Education Officer responsible for school closures in the event of hurricanes. Schools are closed for impending hurricanes because about 80% are designated emergency shelters. The Act did not outline any other key roles, responsibilities, institutional or operational frames and procedures to address education during LIH in Dominica (See Education Act 1997). Moreover, there were no written policies, plans or SOPs within the Ministry to manage transitions from schooling to shelter and back to schooling. Additionally, there were no detailed

guidelines in the Act or the accompanying Regulations for how principals should proceed when requesting school closures or responding to hurricanes, generally.

### **6.3.3 Capacity at school level**

Principals themselves had no arrangements in place at their schools to deal with LIH. They were unable to reach the Ministry of Education for approval to close schools in time. They were unaware also of their own prerogative to close schools and submit reports ex-post, when they could not reach the Ministry. By their own admission, they lacked the training; awareness and guidance for handling LIH (see JM; VP; VR; JB).

Principals had to depend on the advice and guidance of parents and other community members to evacuate students. In at least three cases, it was community interventions that prompted principals and teachers to take action to move students to safety during Hurricane Ophelia (see interviews with JB; VP; JM). Even then, by the time principals opted to act, conditions had deteriorated significantly. With roads flooded and impassable, for example, students were still dismissed from school. They became stranded. Many walked home and did not get there until several hours later. In one case, a group of students overnighted in a community on the edge of the disaster zone. It took one of the elite officers I interviewed two days to finally get home, four miles from work, during Hurricane Ophelia (RE). On the one hand, principals' responses reflected the uncertainty and administrative paralysis they experienced during LIH. On the other hand, it showed how community awareness and alertness may have averting disaster and kept children safe

Comprehensive, multi-sector, multi-hazard, multi-actor approaches are replacing command and control approaches to emergency management because of their complex nature (Comfort, et al., 1999, UNESCO, 2010). Dominica's approach to disaster management was multi-sectoral, multi-organizational and similar in organization to the United Nations' Cluster Approach (see UNESCO, 2010). Sector Task Forces replaced clusters but did not include an education Task Force (See Figure 16).

Globally, Ministries of Education were not directly involved in addressing education during catastrophic events even though they were primarily responsible for education (Sinclair, 2002; Sommers, 2004). This was so, because many lacked the capacities or were too badly damaged or affected to respond effectively (Sinclair, 2007; Sommers, 2008, Kagawa, 2005). As a result, international humanitarian and inter-governmental organizations, like UNICEF and UNESCO; and NGOs like Save the Children and Child Fund International became lead agencies in response and recovery.

The institutional paralysis associated with unpredictable conflict-based emergencies or sudden catastrophic disasters are expected because of the widespread destruction of education sectors they caused (Retamal & Aguilar, 1998; Sinclair, 2002; INEE, 2004). In the case of LIH, whole education systems were not destroyed. If the appropriate institutional arrangements, policies, plans and guidelines were in place before hurricanes, they would most likely to be in place after. Planning for education, therefore, should be part of every emergency program from the beginning (Pigozzi, 1996); but one may not be able to plan for that which one has not assumed responsibility. In one school, for example, the principal reported teachers "fleeing" the premises and leaving students behind as Hurricane Ophelia unfolded (JB).

In the final analysis, though, the nature of the emergency is not that important in terms of the immediate needs of those affected (Pigozzi, 1996). They all need shelter, protection and nourishment, health care and education, for example, the overall goal of those addressing emergencies (Pigozzi, 1996). This distinction may be helpful, however, for thinking through how to go about ensuring that good and appropriate education is part of emergency response (Pigozzi, 1996).

In summary, NEPO and ODM lacked the capacity to fulfill their mission and objectives of preventing, mitigating and preparing for potential disasters in Dominica. Despite recommendations for improvement, many of the initiatives, like establishing evacuation routes and bringing these agencies under the ambit of the Prime Minister had not been implemented. The Ministry of Education had been assigned specific responsibilities for education during low-intensity hurricanes. However, the Ministry itself was assigned to five other task forces, like shelter management and refugee-handling that were unrelated to education. It did not have in place, policies, plans or guidelines for addressing education during emergencies and did not incorporate any of its assigned responsibilities into its operations. Consequently, principals did not make any arrangements for handling hurricanes at their schools. They lacked training, awareness and guidance and had to rely on communities for assistance. As a result, they appeared paralyzed and dismissed students into the disaster areas. Education was deprioritized during LIH. Interviews with elite officers, Section 3.5 confirm this deprioritization.

## **7.0 ELITE OFFICERS PERCEPTIONS AND ASSERTIONS**

In addition to the deprioritization of education during low-intensity hurricanes, two other major themes emerged in interviews with elite public officers. These were inadequate local financial resources to address chronic low-intensity hurricanes and their impacts on education; and the adverse impacts of low-intensity hurricanes on education and the limited policy responses. Sections 7.1 – 7.3 discusses these themes.

### **7.1 THEME 4: ADVERSE IMPACTS ON EDUCATION AND LIMITED POLICY RESPONSES**

Disruption to normal schooling was a major impact of low-intensity hurricanes on the education sector in Dominica (KJ; MP; EC). The others were 1) fatalities and psychosocial impacts, and 2) diversion of resources away from education. This section discusses these impacts.

#### **7.1.1 Disruptions**

According to the elite public officers interviewed, school closures in preparation for hurricanes and direct damages to buildings caused school disruptions (. Even when storms were eminent

and did not make landfall, schools had to be closed and most buildings evacuated because they were also emergency shelters (MP). *“If every week you’re preparing for a hurricane it means every week you are losing time in the classroom with the children and you know you have set dates for exams and everything”* (MP). Anwar, (2008) confirmed countries were often preparing for new disasters while they were recovering from earlier storms. This is likely to remain a problem well into the future. Goldenberg, Landsea, Mestas-Nunez & Gray (2001) found there was both increased hurricane frequency and intensity in the Caribbean since 1980:

The years 1995 to 2000 experienced the highest level of North Atlantic hurricane activity in the reliable record. Compared with the generally low activity of the previous 24 years (1971 to 1994), the past 6 years have seen a doubling of overall activity for the whole basin, a 2.5-fold increase in major hurricanes (50 meters per second), and a fivefold increase in hurricanes affecting the Caribbean. The greater activity results from simultaneous increases in North Atlantic sea-surface temperatures and decreases in vertical wind shear. Because these changes exhibit a multidecadal time scale, the present high level of hurricane activity is likely to persist for an additional 10 to 40 years. The shift in climate calls for a reevaluation of preparedness and mitigation strategies (Goldenberg, et al, 2001, p. 474).

Consequently, Dominica had a 10% chance of being hit by a hurricane, each year (Williams, 2010). On average this would be at least a category 2 storm every two and a half years. This would be four major hurricanes by the time a cohort of student graduated from high school. This constituted chronic exposures to LIH. The failure, therefore, to recognize and address this reality may be at the center of failures in addressing education during LIH. In 2012, Dominica adopted a “Low Carbon Climate Resilient Development Strategy, 2012 – 2020” that would adapt and focus Dominica’s development to include hurricane frequency and impacts. This did not mention the education sector, or its frequent disruptions from LIH (CIF & GOCD, 2012)

Disruptions in water supply, and flooded roads as a result of these frequent hurricanes also disrupted schooling (RE). In 2011, for example, more than 80 millimeters of rain fell in six

hours during Hurricane Ophelia (IRFC, 2011). It caused extensive flooding and damages to homes, related infrastructure and affected schools along the West Coast. Five schools were in the immediate disaster zone and had to be closed but by that time, students' routes home had flooded. It was two-three days before school resumed. Low-intensity hurricanes were also fatal.

### **7.1.2 Fatalities and trauma**

Interviews with principals confirmed LIH were fatal for schools and possibly traumatic for teachers and students. In 2007, for example, Hurricane Dean caused two fatalities. The PTA Secretary at one school and her son who was a student at that same school were buried beneath a huge landslide. My interview with this school principal captured the apparent traumatic experience.

Well, huh, at the time, I felt my heart sank because I knew she was gone (long pause) and I could not believe she was gone because, huh, she was so close; we were so close. I remembered one morning I came here. I only went to her office because she comes at eight. I was going to say good morning to her (YS).

She had forgotten this PTA secretary had died and was no longer there. Notwithstanding these impacts, policies and strategies to better address LIH had not been developed or adopted.

### **7.1.3 Poor response policies**

Key LIH lessons on preparation and mitigation had not been learnt despite the recurrent and chronic nature of LIH, and their cumulative impacts on education. Ministries of Education were expected to play pivotal roles in formulating policies that would effectively address education during LIH (INEE, 2010; Sinclair, 2002, 2007). Those policies as shown already did not exist.



Five of the nine elite officers interviewed believed negative attitudes and the failure to collaborate; plan and budget for LIH had not changed. One elite officer lamented the absence of templates for action, the lack of communication mechanisms, the absence of strategies to deal with associated floods, and a road map for evacuations during low-intensity emergencies (RE). These negative attitudes, behaviors and neglect resulted in the cultural of institutional failure to accept responsibility for LIH.

These attitudes included, for example, a failure to establish a contingency fund for Dominica (FP). The failure to collaborate and “*just come together and make a decision*” to establish this funding was viewed as a recurring problem (FP). Consequently, governments turned to international funding sources as supplements (Linnerooth & Mechler, 2007; Price & Mihir, 2009). Elite officers interviewed, however, supported the establishment of contingency fund to address low-intensity hurricanes because existing funds were deemed inadequate (SH, FP).

## **7.2     THEME 5: INADEQUATE FINANCES FOR ADDRESSING EDUCATION IN EMERGENCIES**

Overwhelmingly, financial resources to address disasters worldwide were inadequate due to global increase the incidence and costs (Hofman & Brukoff, 2006; Smillie & Minear, 2003). Additionally, aid pledges for disasters greatly outstrip actual commitments (Wathne & Hedger, 2010). The United Nations OCHA Financial Tracking Service showed only 38% of the \$8.6 billion humanitarian funds canvassed for 2013 had been committed or collected (OCHA, 2013). Most of that funding, however, went to UNICEF and was spent mostly in African and Asian

countries (OCHA, 2007b; OCHA, 2013). Notwithstanding, affected countries still anticipated aid and humanitarian assistance during disasters while donors faced moral difficulties with withholding such aid, perpetuating the perception that aid was available and accessible (Wathne & Hedger, 2010). With little actual access to global aid funding, therefore, countries like Dominica with chronic low-intensity hurricanes have turned to loans and grants. They have also diverted funds from planned activities for hurricane response but had begun to consider local contingency funding for disasters. These next three sections discuss these options.

### **7.2.1 Local and diverted funding**

Local funds were already considered inadequate for meeting planned obligations and therefore would not meet the “unanticipated” costs of low-intensity hurricanes (BA, 2011; BA, 2012-2013; FP; SH). A review of the Ministry of Education’s annual budget data for 2003 – 2010 showed, however, that at least on the books, more often than not, there were annual surpluses. These surpluses, however, could not be carried-over into the following year, nor were they readily available at the end of the year to be re-assigned. Between 2007 and 2011, however, budget funds in excess of \$322,000 earmarked for school maintenance were diverted for other undisclosed purposes (EPDU, 2012).

In 2011/12, however, budget estimates of school repairs totaled \$1.9 million but actual allocation was \$900,000 on account of limited available funds (EPDU, 2012). This is significant, since a recent report on school plant maintenance in Dominica found schools that did not meet building codes and standards, and were vulnerable to hurricanes (CEP, 2011). Despite

these safety violations and available funds, the Ministry did not appear to make school safety a priority.

An elite officer within the Ministry of Education said that they prioritized but did not indicate what these priorities were (SH). In practice, funds were diverted from planned activities to address damages to school buildings and to provide support, that is, books and uniforms, for children (JC). Education during low-intensity hurricanes was not planned for (JC).

Planning priorities were the responsibility of line item ministries (RE). The Ministry of Finance however, was responsible overseeing the planning process in Dominica. Line ministries had failed to plan and prioritize budget for LIH, and the Ministry of Finance appeared not to have had the authority to enforce compliance. Consequently, Dominica turned to external funding like loans to supplement local funds for addressing LIH.

### **7.2.2 Loan funding**

The Caribbean Development Bank provided low interest emergency response loans to Dominica following low-intensity hurricanes (CDB, 2009; RE; EC; KJ; EL). Dominica received a \$30 million loan following Hurricane Ophelia (RE). One of the principles underlying the Bank's strategy is;

Ensuring that Disaster Risk Management (DRM) is integrated into all economic, social and environmental sectors in member countries such that it becomes an integral part of everyday life and is not viewed as an activity limited to a national office of disaster management during an emergency situation (CDB, 2009, p. 3).

In addition, it made provision for the post-disaster response to reduce risk, through: 1) emergency relief grants, 2) immediate response loans and 3) rehabilitation and reconstruction

loans. Once a disaster is declared and determined, the bank offers member states loan funding in writing (CDB, 2009). Other entities offered loans as well.

Following Hurricane Ophelia, the Government of the People's Republic of China provided similar response loans (EC; KJ; RE). Dominica received a \$35 million Chinese loan after Hurricane Ophelia (RE). Neither these Chinese nor CDB loans were earmarked for education. Rather they were designated but for road repairs and reconstruction. Indirectly, these may have included road access to schools but this was never explicitly stated in official documents reviewed or in interviews.

Loans increased Dominica's national debt at times when it experienced losses to a significant portion of its GDP as a result of LIH (FP; RE). Annually, low-intensity hurricanes resulted in a 4% decline in GDP or between \$50 and \$100 million in damages (RE; KJ). This happened because agriculture and in particular bananas, the sector which makes the largest contribution to the economy suffers severely from hurricanes. As a result, government actively sought grant funding that would cushion its debt burden.

### **7.2.3 Grant funding**

Dominica received grants from friendly governments like Venezuela to address emergencies. These, however, were earmarked for the construction of coastal retaining walls to reduce the vulnerability of coastal road and communities to sea surges and high seas generated by LIH (RE & EC). Indirectly, these too may have included schools or route ways to schools located in these coastal communities. The grant amount, however, was not made public. Dominica Red Cross received grant funds of \$27,500 Swiss Francs from the International Federation of Red Cross and

Red Crescent (IFRC) Disaster Relief Emergency Fund (DREF)<sup>45</sup> in 2012. This was to be used to deliver immediate assistance to 79 families (approximately 395 persons). Children may have benefited but not direct grant funds went to education.

In summary, despite budget surpluses, elite officers still felt there were insufficient funds to establish contingency funds (FP). As a result, Dominica used loans, grants and transferred funds from planned activities in response to low-intensity hurricanes because of poor planning and prioritization. None of these loans or grants, however, were earmarked for or allocated to education. The expectation is that “National authorities, humanitarian agencies, donors, NGOs, communities and other stakeholders should work together to ensure adequate funding for emergency education provision (INEE, 2010, p. 113). Beyond those already mentioned few funding sources for education and low-intensity hurricanes existed. This may have been so because education is deprioritized during emergencies as the next section will show.

### **7.3     THEME 6: EDUCATION IS DEPRIORITIZED DURING LOW- INTENSITY EMERGENCIES.**

Education is considered the fourth pillar of humanitarian assistance behind food and nutrition, health and water and sanitation, however in Dominica it is deprioritized during low-intensity hurricanes (See Retamal & Aguilar, 2009). As expected, rather, protection of life and property was considered top priority, followed by health and safety, and then transportation and communication (RE, KJ). However, elite education officers I interviewed identified “*safety of*

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<sup>45</sup> The IFRC’s Disaster Relief Emergency Fund is a source of un-earmarked money created by the Federation in 1985 to ensure that immediate financial support is available for Red Cross and Red Crescent emergency response.

*children, safety of teachers and safety of school buildings*” as priority (MP; SH). This section explores further this deprioritization and the rationale given. It is built on the premise that during normal budgetary allocations, education is given priority.

### **7.3.1 Education as priority**

During normal budget allocations, education was considered top priority in Dominica. It often received the largest share of government’s annual budget. Between 2005 and 2010, education received between 13% and 25% of the national budget. During that six year period, its share of the national budget share was ranked either first or second (EPDU, 2012b). Education was also the largest public sector ministry and employed the largest number of public officers, including over 1000 teachers in 2012 (EPDU, 2012). During LIH, education tends to lose its priority status (Esnor, 2010; Madifs, Maetyris & Triplehorn, 2010).

### **7.3.2 Deprioritizing education**

Schools became emergency shelters during LIH, had to be closed and students dismissed in preparation for these hurricanes. Protection and safety of the public became priority then (KJ). Children, therefore, had to vacate their school premises to accommodate the public. Elite officers in both the Ministry of Finance and the Ministry of Public works confirmed this. One officer stated, *“Classroom teaching is not priority as school days and terms can be adjusted”* (RE). Another officer identified, *“health and safety, transportation and communications”* as priority and *“maybe somewhere under there, we have education”* (KJ). This was based on the

rationale that the school day or term (semester) could be extended to accommodate the instruction days lost as a result (RE). Experience showed, however, that neither stated nor enforceable policies designed to ensure recovery of instruction days lost existed.

Even a major concern such as evacuating children or reuniting them with their parents though a stated priority, could not be executed because as one elite officer confirmed evacuation routes, maps or strategies for action did not exist (RE). This chronic gap between stated and enacted policies signaled political and managerial failures to recognize children as among the most vulnerable during LIH.

The INEE Minimum Standards required education authorities to prioritize the continuity and recovery of quality education during emergencies (INEE, 2010). Moreover, Dominica was a signatory to international conventions, like the 1989 International Convention on the Rights of the Child that secured the right of children to an education, protection, safety and the protection of their learning spaces during emergencies (See Table 2). Had children been duly considered, particularly within the Ministry of Education, better preparation would have been made to secure their safety and education during LIH. In theory, though, the Ministry of Education considered education priority.

### **7.3.3 Ministry of Education and prioritizing education**

There appeared to be a gap between what the Ministry of Education said and what it actually did. Elite education officials, for example, identified “*safety of children, safety of teachers and safety of buildings*” as priority during low-intensity hurricanes (MP & SH). Evidence showed; 1) they had not budgeted for education during LIH; and 2) education’s responses were mostly reactive

using funds diverted from planned programs to address impacts. These actions were consistent with “quick-fixes” or responses that did not address the fundamental issues of low-intensity hurricanes, like repairs and rehabilitation, instead of incorporating LIH into education policies, plans, budgets and operations (Pigozzi, 1996; Vargas-Barón & McClure, 1998). Apart from the disaster agent itself, in most, but not all cases, the major source of problems is to be found in organizations responding to them (Dynes, 1974 cited in Quarantelli, 1989).

Overall, prioritizing education during LIH was largely rhetoric. Due consideration was not given to safety, child and school protection and safety as a critical part of the protection of life and property. With respect to the Ministry of Education, the agency legally responsible for education, there was a gap between its assertions and actions about prioritizing education. Officials said education was priority but actions on the ground did not show that it was. Principals lacked guidelines and were unable to communicate with the MOE particularly during Hurricane Ophelia, school repairs were delayed well beyond the reopening of school. Discussion of principals’ interviews in Chapter 8 confirmed these lapses and others.



## **8.0 PRINCIPALS' EXPERIENCES**

Three major themes emerged during interviews with principals. These were: 1) The damaging impacts of low intensity hurricanes on their schools; 2) multiple actors; and 3) mitigation strategies. These are discussed below in the three sections which follow.

### **8.1 THEME 7: DAMAGING IMPACTS ON SCHOOLS**

In addition to the two fatalities mentioned earlier, low-intensity hurricanes in Dominica, destroyed teaching and learning materials, and damaged school buildings. This section explores the impacts of low-intensity hurricanes on schools in Dominica through the perceptions and experiences of school principals I interviewed.

#### **8.1.1 Damaged school buildings**

Gale force winds, floods and landslides associated with LIH damaged school buildings in Dominica. Hurricane Dean damaged twelve schools in 2007. Specifically, it damaged window, doors and roofs totaling over \$600,000 (EPDU, 2007).

Damages were prevalent where structures were wooden, aged and did not adhere to building codes and standards. In one case, inadequate precautions were taken at the end of the school year<sup>46</sup> to ensure windows and doors were secure. As a result, Hurricane Dean damaged them. The actions and practices of contractors, contraction supervisors, principals and other relevant school personnel, therefore, increased the vulnerability of structures as the section on building inspections showed.

Landslide also damaged schools or caused fatalities. One landslide associated with Hurricane Dean damaged the back wall of a classroom. The estimated cost of repairs was \$20,000.

Well huh, at that time, I felt that my heart sank, because I knew she was (pause) and I could not believe that she was gone because um she was so close, we were so close. I remembered, one morning I came here. I only went to her office (pause) because she comes at eight. I was going to say good morning to her.

*So she worked right next to you? I asked).* Just next door here (*Oh! oh! Alright! So you saw each other every day? I questioned).* Every day, yes! Until after she was gone! A new secretary came and I was still calling her Ms. E. Good morning Ms. E because Ms. E was there and we were close and then she would say, “But miss, I am tired of telling you that I am not Ms. E.” We were very close and she did a lot of stuff for me. When I did not have time, I would say, “Ms. Esprit, I want that, photocopy that for me, please or type that for me, please because I have a class. I am going to the class, you know, do some photocopies for me, please.” And I would get my work done. She would give me a lot of assistance whenever possible, you know (YS).

This was five years after Hurricane Dean yet the loss, and the struggle to cope with it were evident in this exchange. The emotions captured in this account, as well, may have been evidence of trauma. This principal had forgotten the former clerk was gone.

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<sup>46</sup> The hurricane season lasts from June to November each year. Schools in Dominica are closed for their annual vacation from July to August. Schools would be in session for four months of the season – July and September – November each year.

Notwithstanding, neither she, nor her teachers and students had access to professional grief counseling or psychosocial support. Since 2000, the Ministry of Education has had professional counselors located in its central office. Students can be referred to these officers but similar counseling services are not available for teachers. Ensuring that teachers receive psychosocial support first so they in turn can help students cope is essential in dealing with trauma associated with emergencies like low-intensity hurricanes (Sommers, 2006; UNICEF & University of Pittsburgh, 2004). Children too required psychosocial support.

In one case, two students were housed in temporary emergency shelter for at least two weeks after their homes flooded during Hurricane Ophelia (VR). While the impacts of that experience may not be known, psychosocial support and the “return to happiness” program are important for addressing childhood trauma caused by disasters (see Aguilar & Retamal, 2009; Save the Children, 2004; UNICEF & University of Pittsburgh, 2005). UNICEF’s Child-friendly Spaces created opportunities for support and protection during disasters as well (UNICEF, 2004). In Dominica, Child Friendly Spaces have been adapted into Child Friendly Schools (CFS). This adaptation should begin to create a transformative, proactive approach to child protection and safety. Its impact was yet to be evaluated but one principal outlined the role CFS played in providing psychosocial support for children after hurricane Ophelia:

We have child friendly school (CFS) initiatives going on and so the teachers went home-visiting to talk to the parents, talk to the children to find out what happened, and when they (children) came back to the school, we also gave them a chance to talk to the class about the experiences (VR).

In the absence of professional support, principals used home visits, simple whole class techniques to engage students as they talked about their experiences, and the loss of their friend and classmate in the case of the fatalities. The effectiveness of these simple interventions had

not been assessed. Studies indicated, however, that PTSD from catastrophic hurricanes can persist over long periods (Caldas de Almeida, 2002; Feitelberg, 2007).

A study conducted five years after Hurricane Mitch impacted Hondurans found, 22% of the population were psychiatric cases; 18% had major depression and 11% suffered from PTSD (Caldas de Almeida, 2002). Similar trauma was recorded in children. Studies conducted in the Cayman Islands three years after Hurricane Ivan found 34% of the 129 students surveyed suffered from full PTSD; 22% from partial PTSD and 54% were depressed (Fietelberg, 2007). These traumas, however, were associated with catastrophic events but one would expect recurrent and untreated trauma, especially in children, to persist, as a result of frequent and chronic exposures to LIH in Dominica. In addition, to damages to buildings, fatalities and their associated traumas schools also lost essential teaching and learning materials.

### **8.1.2 Lost teaching and learning materials**

As result of damages to buildings and flooding, schools lost valuable teaching and learning materials (BV; PJ; VR; VP). These materials were damaged as a result of landslides and flooding from nearby rivers. They were also damaged by the direct ingression of rain when roofs, doors or windows were damaged or by blinding rain gaining access to classrooms through construction blocks designed to aid ventilation (CEP, 2011).

Two schools had their computer rooms flooded; another had its library flooded, resulting in the loss of books and other instruction materials (See Figure 19) and in still another, its poultry shed for agricultural science was destroyed. In one school, rainwater from Hurricane Dean

flooded and destroyed the computer room, its computers, home-economic equipment and furniture after the roof was removed completely. The use of porous dry wall materials for the ceiling exacerbated the impacts (BV). Six months had elapsed before repairs were undertaken which compounded the impacts and compromised student instruction particularly in Home Economics. Unfortunately, the lost computers, home economic equipment and books were never replaced (BV & VP). The end result was always disruption, lost in instruction time and possibly adverse impacts on student performance.

No study or record exists on the effects of LIH on student academic performance and achievement in Dominica. Studies conducted in other hurricane prone areas do show connections between hurricanes and student academic performance. Research studies conducted in Florida and North Carolina showed hurricanes can have adverse effects on student academic performance on critical tests (See Holmes, 2002; Baggerly & Ferretti, 2008; Pane, McCaffery, Karla & Zhou, 2008).

In summary, LIH in Dominica were fatal for two people. They also damaged and disrupted nineteen schools, their learning materials and equipment either through direct wind forces, landslides and/or flooding in 2007 and 2011. In turn, they were traumatic for principals, teachers and students. They also disrupted instructions and may have affected students' academic performance, although this could not be confirmed. Despite these consequences, responses did not always cover the full consequences of these hurricanes as this next section will show.

## **8.2 THEME 8: MULTIPLE ACTORS**

Several actors were involved in response following low-intensity hurricanes in Dominica. These included the Ministry of Education, school staff, Non-government Organizations (NGOs), principals and their school communities. This section discusses the roles these actors played and principals' assessment of their responses beginning with the Ministry of Education.

### **8.2.1 The Ministry of Education**

Principals credited the Ministry of Education either fully or in part for school repairs and rehabilitations following Hurricanes Dean and Ophelia. The Ministry repaired ten school buildings. They repaired walls, doors, windows and roofs. In total it spent about \$500,000 on repairs. Overall, it had primary responsibility for both pre-disaster and post-disaster response including disseminating SOPs to educational institutions and evacuating students (NDP, 2001). In addition, they had overall responsibility for education including the provision of materials and supplies in accordance with the Education Act 1997 and Regulations, 2011. It is uncertain why it chose to focus solely on building repairs but insufficient finance at the national and ministerial levels were reasons given. As a result, NGOs financed repairs in two schools.

### **8.2.2 Non-Government Organizations (NGOs)**

NGOs repaired two schools. In addition to the repairs to the damages sustained, extensive renovations were made to these schools including complete re-roofing in one and the re-

construction of lunch shelters in each. The cost of repairs and renovations far exceeded the initial estimates of \$22,000 for repairs. Notwithstanding the extensive works on these schools, I found both lunch sheds lacked rafter-to-purlin ties in their roofs. This was a violation of the building code which left these buildings vulnerable to future damage. Principals were unaware. When asked about the absence of these ties, one stated simply, “The shed is new” (PJ & MH). Apparently, new was taken as “safe or secure” despite being in violation of Dominica building codes and standards. Based on principals’ interviews, communities were also involved in some of the repairs undertaken and other responses at these schools (MH).

### **8.2.3 Parental and community involvement**

NGOs tend to partner with communities in service delivery and in this case, the school repairs. Communities provided free labor during school repairs and renovations after low-intensity hurricanes in Dominica. They were involved, for example, in the construction of the lunch shed at one school which an NGO financed (MH).

Communities were also involved in the critical evacuation of students as Hurricane Ophelia unfolded. Their knowledge of local conditions and their astuteness during that storm may have averted the loss of lives, for example, in one community where there were two hurricane-related fatalities, five years before. One principal described that experience working with a key community member during Hurricane Ophelia:

The teachers came to me and they are saying miss the wind is getting stronger and then pelting rain, rain, rain, rain and then one parent came to school and he said, he came for his children because usually at C... when it rains like that it washes away the bridges and there is one important bridge that joins the school to the village. So he asked me whether he could have his children. So I say no problem you can have them. Now there is this young lady who works as

the village council clerk whose office is attached to the principal's, and she being from C..., she advised me. She said, "Ms. M, I think after break we should send them (*the children*) home." Then um, when we looked at the rain, the way it was getting stronger and stronger, you know, she said, "Best I call one of the bus drivers to take them." So she did call and I told the teachers we are going to let them go after they had their break. They had break and after break, our break was 10:30 so; about 11am we dismissed them. (JM)

As a result, students were able to get home safely before conditions deteriorated. In addition, teachers who resided outside of this community were also able to get home without incidents. The quick thinking of this young lady and her knowledge of disasters in this community may have secured the safety of students and teachers.

There appeared to have been no strategies or plans at the school to respond appropriately. Principals would later confirm there were no policies or guidance at the school level to deal with chronic LIH (JB, JM). They seemed unaware of the implications of LIH for their schools. Awareness, however, should be part of every agency's strategy. It should be prepared to address education in the event of an emergency (Pigozzi, 1996). Evidence, however, from the literature suggested that during emergencies the best preparedness plans can go awry:

There often is a big gap between what was planned and what actually happens in a major disaster crisis. There is, in fact, only a partial correlation between the undertaking of preparedness planning and the successful or good management of community disasters (Quarentelli, 1989, p. 45, 46).

This is so because preparedness planning is strategic while crisis management is tactical. Adjustments or contingencies to preparedness planning have to be made as low-intensity hurricanes unfold: related knowledge, assertiveness and leadership are essential. Bringing together all essential actors including communities for drills and exercises, can reduce the gaps.

Community involvement, therefore, is a critical aspect of this adjustment (Pigozzi, 1996; INEE, 2010). Practice, practice, and practice through drills and exercises is the key to LIH preparedness. Their participation is recommended for the analysis, planning, design,



implementation, monitoring and evaluation of education responses (INEE, 2010). In a number of schools, however, principals and teachers used their own initiatives in responding to low intensity hurricanes

#### **8.2.4 Principals and staff**

As weather conditions deteriorated during Hurricane Ophelia and attempts to reach the Ministry of Education failed, principals, unaware of their authority to close schools became indecisive. As noted already, teachers at one school abandoned students and the principal. Another school became inundated with four feet of floodwater from a nearby river. Students evacuated to the upper floors but panicked as flood waters rose. Eventually with assistance from parents and the nearby fire and ambulance services, they were hoist one-by-one across the school's perimeter fence to safety (VP). This school was also a designated emergency shelter. No one talked about keeping the children in place and have parents come to school as a shelter. The access road, however, to the school was impassable. One principal, however, described his effort to keep students at school.

Teachers were already leaving, you know, I had to call them back, Say hey guys we have the students there. They are our responsibility. We need to see to it first that these young people get to their home safely. So they agreed and really put a plan in place. This is where we had a few teachers go down to the river side. There were a few who arranged with the vendor to have the students fed... Someone from the village called and said Mr. JB, it is very unsafe to dismiss the children to those who were heading north and advised we also keep them so we had a number of students who were already wet come back to the school, so we also had to find clothing for them in the meantime, you know. So we really had them organized into groups based on the direction they had to go. It was right after 7 O'clock, I was the last man on deck (JB)

An elite education officer had advised this principal in a telephone conversation as Hurricane Ophelia unfolded. Using his initiatives, he was able to put in place a plan of action to

deal with these situations and at the same time keep children safe and comfortable using available resources and involving communities.

Parents, principal and staff spent the two days following Hurricane Ophelia cleaning and clearing while students remained home. They lost, therefore, three instruction days. Principals expressed satisfaction with the contribution parents made but some seemed dissatisfied with the Ministry of Education's response. These are discussed in the next section.

### **8.2.5 Response assessment**

Most principals declined to share an assessment of their satisfaction with the Ministry of Education's response to the low-intensity hurricanes they experienced. Six did not offer a response. Three were satisfied and two expressed dissatisfaction.

NGOs repaired the two schools where principals expressed satisfaction. A third school where the principal expressed satisfaction suffered only minor damages totaling \$5,000. A review of a periodic progress report on the repairs dated 12 September 2007 showed only one school was repaired fully. This was one week after the commencement of the new school year and one month after Hurricane Dean damaged them.

Notwithstanding, only two principals expressed their dissatisfaction with the Ministry of Education's responses. They were dissatisfied with their inability to reach the ministry and its failure to conduct hurricane impact assessments or to check on them afterwards (JB, VP & VR). Both described officials as "insensitive" for requesting their attendance at a professional development workshop, the day following. One of these principals opined:

Let me ask was any... did anyone come from the ministry to do an assessment? Up to today, I do not know it...part of that but you can detect. I just find the government persons, the persons whom you working with pretty insensitive (laughing). (*You can go ahead*) even after we had, maybe they did not understand the extent of the damage, if not damage per say but the amount of water. It's because we had some good drainage system that's why the water...It could have gone higher; and the amount of silt that was deposited on the courtyard and in the classrooms.

We were supposed to be having a workshop and I could not believe that my EO (District Education Officer) was asking me to come to attend a workshop, the next day in a school with all the silt on the ground. My books were, most of my books, well not most but a good bit of them got wet, and we had to throw them away. We could not operate in a system like that I do not know how and nobody and somebody wanted us to attend (VP).

The disappointment this principal felt and the lack of post-hurricane support seemed difficult to comprehend. For another principal, the disappointment seemed personal as well. She described her experience:

I was really disappointed because we were flooded out, and as if they thought nothing had happened; when I reached home I met the river in front of my door, river at the back. I was in the middle of a river and next day while we are trying to sweep out water, you are texting to say that the meeting is still being conducted. Imagine, I got support from principals in my district, like they passed to visit but nobody from the Ministry of Education. I am not saying they should take the job of police officers and so, but my husband is a police officer and the police were right there (VR).

She and two others felt that with greater autonomy, they would have been able to make emergency decisions without the Ministry's approval. As already noted, they were unaware, however, of their legal authority to dismiss students and close schools during LIH. Their failure to know and act accordingly brought into sharp focus their level of awareness, training and preparedness for handling LIH. Principal and teacher preparation programs in Dominica did not include training for managing LIH. Principals felt, therefore, that they were left on their own to respond, and expressed disappointment about that (JB, VP & VR). Principals believed the Ministry of Education should have followed-up out of concern for teachers and students especially those whose homes were flooded during Hurricane Ophelia.

Disasters are local and local officials like principals have to be prepared to act when they occur. It means being aware, planning, drills and exercises and practice, practice, practice for eventualities and uncertainties. It means adapting to events as they unfold and that requires dynamic systems, institutions and personnel that can make these adjustments to save life and property. This is contingent, however on their ability to recognize risks to which a community is exposed and to act upon them (Comfort, 2004, 2007).

Overall, the Ministry's response was confined to school building repairs and renovations. NGOS were also involved in repairs. These repairs did not always adhere to building codes and standards. School officials, teachers, parents and key community members assisted with evacuation. Teaching and learning materials and equipment damaged by LIH were never replaced. Overall, principals were mum in their assessment of the Ministry of Education response. Two principals were dissatisfied with the support they received and described education official as "insensitive" to their experiences with Hurricane Ophelia. They asked for greater autonomy because they were unaware of their legal authority to dismiss students and close schools in the event of hurricanes or any emergency. They recommended, therefore, more proactive, mitigation strategies to address LIH in the future.

### **8.3     THEME 9: MITIGATION**

Overall, principals believed mitigation and preparation would have been better approaches for handling effectively the threats of LIH to education. Mitigation, vulnerability and risk reduction were considered better approaches for addressing LIH because of their cost saving potential

(ABD, 2008). They believed more could have been done to prepare for these hurricanes considering they occurred so often. Principals recommended three strategies that could have been employed to mitigate and prepare for LIH in Dominica. These were: 1) Access to appropriate information and guidelines; 2) operational communications networks; 3) and the formulation and dissemination of policies and plans. Notwithstanding, these recommendations, four principals believed “*nothing*” could have been done especially by the Ministry of Education to mitigate impacts. This section discusses these strategies and explains principals’ positions beginning with access to appropriate information and guidelines.

### **8.3.1 Appropriate information and guidelines**

Principals believed access to relevant information and guidelines was critical for dealing with LIH (JB: JM: VP). That information however should have been available long before and in preparation of these hurricanes. The absence of related training and professional development in LIH for school administrators in Dominica contributed to their lack of awareness and uncertainty (JB).

There were no official guidelines or standards operation procedures (SOP) for addressing low intensity hurricanes although the Ministry of Education was responsible for disseminating these to educational institutions (See NDP, 2001). Most principals expressed dissatisfaction, therefore with the absence of feedback and follow-ups. Without the necessary information, guidelines, and feedback, principals were left in limbo. They did not have the necessary training or professional development that would provide the skills to address LIH at the school level.

Organizational missteps with respect to communication and information sharing, the exercise of authority and decision making were common issues during emergencies (Quarantelli, 1988).

Even if principals were able to reach the Ministry of Education by phone, besides the approval to close schools, not much information or guidance would have been available. Besides, there were telephone network congestions and failures that made it difficult to reach the Ministry in the first place.

### **8.3.2 Operational communication networks**

Principals believed stable and operational communication systems and networks were essential for effectively addressing LIH. Five principals in this study placed phone calls seeking guidance and approval for school closures but were unsuccessful (JM; JB; PJ; VP). Many principals were unable to reach the Ministry of Education for during low-intensity hurricanes, for example, as Hurricane Ophelia approached. This happened because communication networks particularly telecommunications collapsed or become unreliable. Experience showed that in the case of Hurricane Dean and Hurricane Ophelia, for example, telecommunications links collapsed either as a result of damaged lines and equipment or congestions. They followed-up in writing to the Ministry of Education reporting damages to their schools as a result of these low-intensity hurricanes (VP; JB; PJ; JM).

Open and accessible communication lines and networks remain critical for information-sharing, guidance and decision-making making as emergency events evolve (Comfort, 2004). Real time information is also important for parents inquiring about their children and their safety. Stable communications networks are essential, therefore, during LIH. Where this may not be

possible, ample preparation through hurricane drills and exercises are required, until it becomes second nature. Principals, however, did not recommend drills and exercise as part of the routine administrative responsibilities that could mitigate the impacts of LIH. The Ministry of Education was responsible for initiating drills and exercises (NDP, 2001). Putting related structures in place to execute these would have been required.

### **8.3.3 Formulation and dissemination of policies and plans**

Principals, as indicated already, lamented the absence of information and guidelines on low-intensity hurricane (JB, VP & VR). There were no hurricane-related policies or plans in place to drive information and guidance. There was no appropriate authority in education to which they could turn for advice and information. In recognizing these gaps, one principal believed there should be a “rainy day,” a “little policy in place” as a risk reduction strategy (JM). Accordingly, children would be kept at home once rains reached a given threshold or were forecast to do so. This of course would have to be done in advance of the start of the school day to give parents sufficient time to make alternative arrangements. Forecast data and information would have to be accurate or at least reliable, and communicated to the public to allow for the necessary adjustments. One elite officer observed, however, that when decisions were taken to close schools and business outlet as a risk reduction measure, debates over payment and compensation for working days lost often surfaced (RE). Parents tended to clamor when sufficient notice to close schools was not given (RE). Three principals, however, believed “nothing” could have been done to reduce the impacts of low-intensity hurricanes.

### 8.3.4 Do nothing

Three principals believe that there was “nothing” the Ministry of Education could have done to reduce the impacts of low-intensity hurricanes because they were “Acts of God.” Elite officers interviewed also believed low-intensity hurricanes were “Acts of God.” The implications were discussed earlier. This perception persists because of the limited knowledge or cognition on hurricanes and their impacts. In assessing responses during Hurricane Katrina in the US in 2005, the issue of cognition surfaced:

Cognition is central to performance in emergency management. Cognition is defined as the capacity to recognize the degree of emerging risk to which a community is exposed and to act on that information. It is the triggering insight of emerging risk that initiates the emergency response process. Without cognition, the other components of emergency management remain static or disconnected. (Comfort, 2007, p.189)

Recognition of risk is the foundation of action and response. Both action and response hinges on the acceptance of responsibility. They involve putting the necessary protections in place to minimize the effect of low-intensity hurricanes. This includes accepting the distinction between these hurricanes events and disasters that often follow when protections collapsed (Quarantelli, 1981). The failure, therefore, to: 1) plan and budget adequately; 2) establish the necessary contingency funds; 3) establish evacuation routes 4) strengthen institutional capacities; and 5) respond appropriately appeared to be consistent with the “do nothing” perception of hurricanes as “Acts of God.” These failures are the disasters. Low-intensity hurricanes are the triggers.

This “do-nothing” expectation exonerated the Ministry from responsibility and glossed over its poor response performance because principals failed to hold it accountable for these



failures. By exonerating the Ministry of Education, principals in turn exonerated themselves from failures that occurred at their schools. This included dismissing students unto hurricane affected areas, rather than keeping them at schools, designated as hurricane shelters, where they would have been safer. Their difficulty in reaching the Ministry for advice during Hurricane Ophelia is inexcusable since they were authorized under the Education Act, 1997 to take the necessary actions during hurricanes to protect children and submit reports ex-post. Repairs did not improve mitigation because inspections showed vulnerabilities and risks persisted in school buildings that were repaired after hurricanes.

## **9.0 RESEARCHERS OBSERVATIONS**

Several studies have inspected building structures to assess their behavior under stress that included hurricanes. Building structures failed at relatively low wind speeds or during low-intensity hurricanes particularly where there were poor attachments at critical connections (FEMA, 1992; Marshall, 2009). These are connections where hurricane ties were not installed. Further, damages were attributed to the failures of attachments and/or materials, inadequate designs, inadequate workmanship and missile (debris) impacts (FEMA, 1992). Few studies particularly in developing countries have inspected post-hurricane repairs to determine the extent to which buildings were affixed with features that resulted in mitigation. Where they have been studied, as in the Eastern Caribbean, lessons from damages and failures of residential buildings after Hurricane Ivan were not incorporated into repairs and rehabilitation. These buildings remained vulnerable to future hurricanes despite repairs (Huggins, 2007). Similar failures were observed with respect to school buildings affected by low-intensity hurricanes in Dominica. This is significant because incorporating codes and standards into building constructions constituted protection and reduces the likelihood of disaster because:

Not every windstorm, earth-tremor, or rush of water is a catastrophe. A catastrophe is known by its works; that is to say, by the occurrence of disaster. So long as the ship rides out the storm, so long as the city resists the earth-shocks, so long as the levees hold, there is no disaster. It is the collapse of the cultural protections that constitutes the disaster proper” (Carr, 1932, cited in Dombrowsky, 1981)

It is the failure to install protections like adherence to building standards and codes that constituted the vulnerabilities and risks. School buildings I inspected after Hurricanes Dean and Ophelia showed despite repairs they remained vulnerable to and at risk for damage and destruction by future LIH.

## **9.1     THEME 10: VULNERABILITIES AND RISKS PERSISTED EX-POST**

School buildings I inspected were vulnerable to hurricanes even after they had been repaired. These buildings: 1) did not all adhere to building codes and standards designed to reduce their vulnerabilities to LIH; 2) They were located in areas at risk for flooding and landslides; and 3) school records located in these buildings were also vulnerable. These are discussed in the sub sections which follow.

### **9.1.1   Violation of building codes and standards**

Roofs and roof members were especially vulnerable to low-intensity hurricanes. Six of the ten schools I inspected had no purlin-to-roof ties. These ties or metal plates are designed to securely connect roof members to each other and so protect them from wind uplift or damage. These codes may not have been present in the first place because of the age of some buildings: one school was constructed in 1969; five were constructed between 1970 and 1976; two between 1980 and 1983 and one in 2006. The older schools were mostly wooden and did not have these

hurricane ties. The Planning Act which governs building codes and standards was enacted in 2002. Regulations to accompany this Act and to ensure its enforcement were still pending.

Photographs taken of these buildings also showed purlins-to-rafters ties were absent, corrugations sheets were rotting and their edges were not fastened to prevent uplift during hurricanes. In three schools where steel trusses were used, rafters showed rotting and vulnerability to uplift. Additionally, in some cases, wooden classroom structures were not secured to their foundations. Based on my firsthand knowledge, these breaches in construction and repairs were due to inadequate supervision during the construction and repairs of most buildings because of inadequate manpower and the failure of the Ministry of appoint building supervisors beyond the one that existed at the time. The financial inadequacy and budgetary pressures made it difficult to hire more supervisors. In one case, however, due diligence should have been followed in ensuring doors and windows were secured before schools closed for the summer vacation. Subsequently, it sustained damages by Hurricane Dean estimated at over \$5,000.

In 1998, a USAID project retrofitted several schools to improve their protective features as hurricane shelters and to strengthen them against hurricanes (See GOCD, 1998), since then, no further initiatives have been undertaken to improve protective school structures. A recent review of the status and practices of school maintenance in Dominica showed school buildings were at risk for and vulnerable to hurricane force winds and earthquakes (CEP, 2011). Shoddy designs and constructions, general disrepair of school buildings due to inadequate funding; limited building supervision and the absence of protective features were identified as contributors to these risks and vulnerabilities (CEP, 2011). Wave Hazard (sea-surge)

Assessment for Selected Sites on the West Coast of Dominica showed, local construction practices reflect the uneven distribution of risk. They are good enough for ordinary weather, but they are not designed to withstand hurricanes (OAS, 1998).

### **9.1.2 Vulnerable location of schools and facilities**

School buildings and facilities I inspected were vulnerable and at risk for floods and landslides triggered by low-intensity hurricanes. Dominica's small size at 289 sq. miles and its rugged terrain limits the availability of appropriate flat land for locating schools. School, therefore, have multiple floors. All, except one, have two floors – ground and upper floors. Many were located along the narrow coastal or river flood plains which left them at risk for flooding and made evacuation nearly impossible. Seven of the schools inspected were within close proximity to the ocean. All were within 300 feet, and five were 100 feet or less from the ocean high water mark. The safe location of schools remained a significant challenge in Dominica. Its topography and location makes it one of the Caribbean countries most vulnerable to disasters (Collymore, 2004). Five of the schools I inspected were located within five feet of a cliff which left them vulnerable to landslides. One principal believed the use of retaining walls would alleviate vulnerabilities to landslides. These, however, would not protect school facilities from floods.

Computer rooms and libraries and other school facilities were also susceptible to flooding. Libraries in all ten schools I inspected were located on the ground or elevated ground floors. Nine computer rooms, for example, were also located on the ground or elevated ground floors. While their locations made them accessible to all students, it also made them vulnerable to flooding. These floods, according to the principal, commonly occurred even during just

heavy rains. They threatened the safety of school records since most were located on ground floors of schools of I inspected.

### **9.1.3 Vulnerable storage of school records**

School records I observed were stored in ways that left them vulnerable to flooding and other water egressions. Eight of the ten schools I observed had their records stored on the ground or elevated ground floors. They were stored in paper file jackets stacked in open shelves or file cabinets that left susceptible to water damage during low-intensity hurricanes. Special policies should be developed and enforced for the secure storage of school records. Remote storage centers either internationally or regionally may need to be considered. Computer storage of school records is not prevalent even though all schools I inspected had computer labs. In addition to the threat of losing valuable school records, the loss of instruction days was a perennial problem.

### **9.1.4 Loss instruction days**

The use of schools as emergency shelters in Dominica remains a fundamental yet unresolved issue because they have to be closed in preparation for hurricanes, disrupted schooling. According to Section 4 (1) b of the Education Regulations, SRO 7 (2011), the school year shall be no less than 180 days. The Regulations stated further,

Where a school in any school year does not meet the required 180 school days within the regular time scheduled in the school time table for the conduct of instructional sessions referred in these Regulations, the principal shall make arrangements for the school to satisfy that requirement unless exempted in writing by the Chief Education Officer.

The principal shall ensure that instructional classes for the school in any school year commence not later than the date of the second Monday in the month of September in a calendar year; and unless otherwise specified by the Minister, shall end not later than the date of the first Monday in July in the following calendar year (Education Regulation, SRO 7, 2011: Sections 4 (2) (3)).

There has been no enforcement of this policy in schools included in this study. There was a 14 year gap between the assent of the Education Act (1997) and the assent of the Regulations. Nothing was in place to track or determine whether this section of the Law was complied with. Principals submitted monthly reports on attendance and the number of in-session school days. This was difficult to verify and data was never disaggregated to reveal instruction days. This raises questions about the extent to which all was being done to ensure children's right to education as enshrined in the International Convention on the rights of the Child. Dominica is a signatory of this convention. Senior Public Officers including Education Officer interviewed were well aware of the prevalence of these disruptions.

In summary, the vulnerable location of schools and their facilities, shoddy repairs that do not always adhere to building codes and standards, inadequate building and maintenance supervisions may continue to place school buildings at risk for damage by low intensity hurricanes. In addition, schools were closed when these hurricanes approach. In turn, these disrupted instruction for many children. The lost instructional days were never rescheduled despite the legal requirement to do so. These losses may be undermining children's rights to an education and their academic performances during low-intensity hurricanes but the MOE has no way of knowing for sure. The Ministry of Education is fully responsible for education during LIH in Dominica and needs to do more to address it, given their frequent, recurrent and chronic impacts and disruptions for children and their education. Chapter 10 provides recommendations for its consideration.

## **10.0 CONCLUSIONS AND RECOMMENDATIONS**

### **10.1 CONCLUSIONS**

Two assertions drove responses to education and LIH in Dominica – the belief that they are “Acts of God”, and that local funds for addressing them had been insufficient. It was characterized as a “God” problem and there was nothing or little that could be done humanly to address them. The result was to look to externalities for assistance. Where external agencies demand greater responsibility, policies have been proposed that were shrouded in fuzzy or non-binding language, and the plans and budget to guide actions have not been implemented. Principals have also bought into the “Act of God” perception and “insufficient funding” assertions.

This study also found that that existing theories on disasters were inadequate to address education during LIH. Existing theories were reactionary and response-recovery focused. Education and LIH requires an anticipatory approach because of chronic, recurrent and impact cumulative nature of LIH. The adaptive development approach proposes the inclusion of LIH in education policies, planning, budgeting and operations. Such an approach treats LIH as chronic and therefore requires a ‘lifestyle’ approach that creates a culture of safety for children and their education. In a sense it is transformative but not on hindsight. It is premised on understanding the



geo-physical and economic contexts within which Dominica exist and incorporating them into plans and budgets. As already stated, this approach makes economic sense for Dominica because for every one dollar spent on risk reduction resulted in seven dollars savings on response and recovery (ADB, 2008). Education in LIH remains a complex proposition that may require trade-offs given the limited resources. Appendix G summaries this complexity and offers a model for understanding and addressing education during LIH in Dominica.

The Government of Dominica seemed to understand fully the impacts and implications of LIH on Dominica's economy, infrastructure and education system. They understood as well the associated issues and challenges. There seemed to be the desire to be more proactive focusing on vulnerability and risk reduction. Consequently, government has attempted to put policies in place, though piecemeal and strengthen institutional capacities to address these hurricanes. These policies and recommendations for institutional improvements, however, have been articulated in non-binding language which seemed incongruent with practices and actions on the ground. Recommendations for institutional improved were only partially implemented.

While policies, though limited, reflect a desire to focus on preparedness and mitigation, actions on the ground have focused on response and recovery but mostly for repairs to infrastructure, like roads bridges and school buildings. Public Safety, transport and communications have been identified as priority. This does not appear to include children, who usually vacate school buildings even when evacuate routes to do so expeditiously did not exist. Despite the frequent, recurrent and chronic nature of LIH, the change policy process has been slow and often non-binding. This could have been so for several reasons which hinge on the failure to accept for full responsibility for addressing LIH:

1. Hurricanes are still perceived as “Acts of God,” and therefore beyond the capacities and responsibility of government to address them adequately.
2. Financial resources dedicated to low-intensity hurricanes have been described as inadequate. As a result, Dominica had depended on dwindling external sources including loans. These loans increased indebtedness.
3. Failure to put in place the necessary financial and institutional policies and frameworks within the Ministry of Education to adequately manage education during LIH.
4. The failure to plan adequately and incorporate low- intensity hurricanes and children’s safety into development and education policies, plans and programs.
5. Failure to prioritize programs and activities in line with available resources in the contexts of LIH particularly within the Ministry of Education.

Consequently, without the necessary training, guidance and relevant support, principals have had to address those aspects of LIH that have had the greatest impact on children – fatalities, evacuation, psychosocial support and loss of teaching and learning materials and instructions. Principals seemed unprepared for the challenges particularly during Hurricane Ophelia which occurred while classes were in session. This approach left children and teachers vulnerable and at risk as Ophelia unfolded. Many were unable to get home and schools were ill-equipped and unprepared to house them despite being designated emergency shelters. This was exacerbated by limited response and recovery. Lost equipment and materials were not replaced. Lost instructional time was not rescheduled. Psychosocial support was virtually unavailable except where principals used their initiatives. Repairs and rehabilitation neglected standards and

codes designed to strengthen school buildings against hurricanes. Relevant emergency information and guidelines for principals were not available and communication protocols were weak and ineffective, and collapsed during LIH.

To begin to change this approach, government institutions including the MOE and principals needed to change their perceptions of LIH as “Acts of God.” Their impacts should be seen as the result of failure to put in place social and cultural protections: cognitive awareness, appropriate attitudes, codes and standards, SOPS, drills and exercises, and make timely administrative and political decisions to mitigate their impacts. It must accept greater responsibility for their management and hold itself accountable for addressing them. This new perception would drive actions to address LIH. This would mean putting in place policies, programs and facilities that strengthen institutional capacities and that better prepare the Ministry of Education and school principals for addressing these low-intensity hurricanes. Simply, it means incorporating child safety and low-intensity hurricanes (LIH) into education policies, planning and budgeting and making the institutional changes that make them an integral aspect of the operations of the Ministry of Education. This would constitute an adapted developmental approach that incorporates LIH vulnerabilities and risk into education development and planning to improve child safety and security. Section 10.2 offers several other recommendations that would begin the shift to this new approach. Those recommendations are those that can be implemented immediately on a low or limited budget and existing manpower.

## **10.2 RECOMMENDATIONS**

Further research needs to be conducted in Dominica, the Caribbean, other regions of chronic low-intensity hurricanes to deepen understanding of chronic low-intensity hurricanes, and their impacts on children and learning.

Government needs to re-think and re-design its disaster policies to reflect local contexts and experiences and give due consideration to LIH, and education during LIH.

The Ministry of Finance can establish proposed financial facilities starting small given the limited resources and strengthen institutions and organizations to enforce their inclusion within the MOE annual budget as a roll-over contingency fund.

Given the limited resources, the Ministry of Education can implement its key responsibilities under the National Disaster Plan, 2001 that does not require large financial outlay: enforce drills and exercises; distribute SOPs to educational institutions; and disseminate information on preparedness.

The Ministry of Education can put in place and disseminate a “rainy day policy” and guidelines as principals recommended to allow for school closures when rain exceeds a given threshold or hurricanes are forecast.

The Ministry of Education can enforce existing laws and regulations associated with low-intensity hurricanes including rescheduling instruction days lost; principals’ responsibilities to close schools and ensure children’s safety.

Treat schools as hurricane shelters for students and children as well and have them equipped to do so when the need arises, as in the case of Hurricane Ophelia in 2011.

The Ministry of Education can be made a NEEC Sector Task Force and a lead agency during low-intensity hurricanes given the vulnerability of children and to ensure it focuses on education during hurricanes.

An officer with direct responsibility for education in emergencies can be stationed within the Education Planning and Development Unit, to ensure the Ministry fulfills its roles and responsibilities for low-intensity hurricanes under the Education Act or NDP, 2001.

Model disaster plans, procedures and protocols consistent with current thinking and approaches in education and LIH can be developed as guides for formulating school disaster plans and empowering principals.

Professional development and in-service training of teachers in education and LIH need to commence with urgency. In the medium to long term, such training should become part of the teacher education curriculum, given the chronic nature of low-intensity hurricanes in Dominica.

**Table 16.** Summary of Study Conclusions and Recommendations, Dominica

Data Collection Methods	Purpose	Emergency themes	Evidence	Findings	Conclusions	Recommendations
Review of official documents	To identify documented policy statements and positions using key words and themes	Theme 1: Risk and vulnerability reduction policy	<ul style="list-style-type: none"> <li>• GSPS, 2006</li> <li>• GSPS, 2012-2014</li> <li>• BA, 2011</li> </ul>	<ul style="list-style-type: none"> <li>• Government proposed risk and vulnerability policies for preparedness and mitigation</li> <li>• Policy framed in non-binding language</li> <li>• In practice focus was on response and recovery</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of policy commitment to address chronic low intensity education in emergencies</li> </ul>	<ul style="list-style-type: none"> <li>• Greater commitment to developing and implementing policies</li> <li>• Inclusion of disaster risk and vulnerability in policy and development planning and strategies</li> <li>• Revise policies using binding language</li> </ul>
		Theme 2: Establishment of Contingency & Vulnerability funding	<ul style="list-style-type: none"> <li>• GSPS, 2006</li> <li>• GSPS, 2012-2014</li> </ul>	<ul style="list-style-type: none"> <li>• Proposed establishment of contingency and vulnerability funds</li> <li>• Non-binding policy language</li> <li>• No direct funding policy for education during LIH</li> </ul>	<ul style="list-style-type: none"> <li>• Funding policies are framed focused on response and recovery rather than risk and vulnerability reduction though those terms are used in sculpting the policies</li> <li>• Absence of policy commitment to establishing funds</li> </ul>	<ul style="list-style-type: none"> <li>• MoF to establish proposed vulnerability and contingency funds starting with available local resources however small</li> <li>• Revise policies using binding language</li> </ul>
		Theme 3: Weak institutional capacities	<ul style="list-style-type: none"> <li>• GSPS, 2006</li> <li>• GSPS, 2012-2014</li> <li>• NDP, 2001</li> <li>• Government Information Service, 2012</li> </ul>	<ul style="list-style-type: none"> <li>• Ministry of Education was not a primary agency</li> <li>• MOE held membership in several NEEC Task Forces unrelated to education</li> <li>• No institutional presence for</li> </ul>	<ul style="list-style-type: none"> <li>• The Ministry lacks the policy, institutional, financial and planning arrangement to effectively and sustainably address low-intensity education in emergencies</li> <li>• It is a</li> </ul>	<ul style="list-style-type: none"> <li>• Appoint an officer within the MOE with direct responsibilities for education in emergencies</li> <li>• MOE should fulfill its roles and responsibilities in accordance with the NDP, 2001</li> <li>• MOE should be</li> </ul>

TABLE 16 (Continued)				education during LIH within Ministry of Education	secondary agency deprioritizing education during emergencies	a primary Task Force under NEPO to ensure greater visibility and safety of children during LIH and a focus on education during LIH.
Elite interviews	To identify the policy perspectives, roles and responsibilities of senior public officers in addressing low intensity education in emergencies	Theme 4: Adverse impacts on education with limited policy responses	<ul style="list-style-type: none"> <li>Elite interviews: RE; KJ; EL; FP; EC; RR</li> <li>BA, 2011</li> <li>BA, 2012 - 2013</li> </ul>	<ul style="list-style-type: none"> <li>Low intensity hurricanes damages school buildings, and disrupting education, as a result of</li> </ul>	<ul style="list-style-type: none"> <li>Impacts are well understood but education is deprioritized expect within the Ministry of Education</li> <li>Importance of Education in emergency is still not recognized</li> </ul>	<ul style="list-style-type: none"> <li>Research and more awareness on education and LIH at the level of senior officers is required to improved understanding of the impacts for children and their education and the role of MOE in mitigation and recovery</li> </ul>
		Theme 5: External financing to address education in emergencies	<ul style="list-style-type: none"> <li>Annual Budget estimates, 2003 – 2009</li> <li>Annual Budget Estimates, 2004 – 2012</li> <li>Elite Interviews: RE, KJ, EL, FP, EC, RR.</li> <li>Budget Address</li> </ul>	<ul style="list-style-type: none"> <li>Education is priority in annual budgetary allocation but is not during emergencies expect for repairs to damaged buildings</li> <li>Contingency Funds for addressing low intensity hurricanes do not exist</li> <li>Loans and grants are main funding strategies resulting in increased indebtedness</li> <li>MOE transfer funds from planned to emergency activities but</li> </ul>	<ul style="list-style-type: none"> <li>MOE transfer funds from planned to emergency activities but only addresses social assistance for books and uniforms, which are normally the responsibility of parents</li> <li>MOE takes a re-active, quick-fix or Band-Aid approach to education in emergencies</li> </ul>	<ul style="list-style-type: none"> <li>MoF to enforce a small roll-over contingency fund within MOE budget annually.</li> <li>MoF to establish proposed vulnerability and contingency funds starting with available local resources</li> </ul>

TABLE 16 (Continued)				for social assistance		
		Theme 6: Education is deprioritized during education in emergencies	<ul style="list-style-type: none"> <li>Elite Interviews: RE, KJ, SH, MP</li> </ul>	<ul style="list-style-type: none"> <li>Safety of people and safety of property were priority</li> </ul>	<ul style="list-style-type: none"> <li>In practice, safety of people did not appear to include safety of children beyond connecting them to their parents</li> <li>Education is not a stated priority except within the Ministry of Education</li> <li>No institutional, financial and planning provisions are made to address Education during LIH in the MOE</li> </ul>	<ul style="list-style-type: none"> <li>MOE to include LIH into policies, plans, programs and operations</li> <li>Make safety of student, teachers and building priority in policy and practice.</li> </ul>
<b>Interviews with principals</b>	Assess the experiences with and perspectives of principal on two low intensity Hurricanes; Dean (2007) & Ophelia (2011)	Theme 7: Damaging impacts on schools	<ul style="list-style-type: none"> <li>Principals Interviews: AA, JB, VP, VR,</li> </ul>	<ul style="list-style-type: none"> <li>Window, doors and roofs, learning materials and equipment were destroyed</li> </ul>	<ul style="list-style-type: none"> <li>The approach was quick-fixes or band aid approaches that did not address the fundamental policy, institutional and financial issues in education during LIH</li> </ul>	<ul style="list-style-type: none"> <li>Adhere to building codes and standards in the construction of school buildings</li> <li>Enforce sanctions for violation of codes and standards</li> </ul>
		Theme 8: Multiple actors	<ul style="list-style-type: none"> <li>Principals: VR, JM, JB.</li> </ul>	<ul style="list-style-type: none"> <li>MOE responses was mainly repairs to buildings</li> <li>Principals and their communities took care of all evacuation, replacing</li> </ul>	<ul style="list-style-type: none"> <li>Emergency matters were left to principals</li> <li>Principals lacked training, guidance and support in ensuring student safety and</li> </ul>	<ul style="list-style-type: none"> <li>Develop a rainy day or a little policy for school closures based on forecast rainfall and hurricanes</li> <li>Enforce hurricane drills and exercises</li> <li>Develop and disseminate</li> </ul>



				<p>books and materials and providing psychosocial support</p> <ul style="list-style-type: none"> <li>• Principals lacked information, guidance and support during and after LIH</li> <li>• Principals depended on the community experiences were often flatfooted in making LIH decisions</li> <li>• Decision may have had increased risks for student safety</li> </ul>	<p>who demonstrated the lack of efficacy and confidence in handling those emergencies</p>	<p>guidelines, SOPs and communication protocols for LIH</p> <ul style="list-style-type: none"> <li>• Treat schools as hurricane shelters for students and teachers as well and equip them to serve that purpose when needed.</li> </ul>
		Theme 9: Mitigation strategies	<ul style="list-style-type: none"> <li>• Principals: VR, JM, JB.</li> </ul>	<ul style="list-style-type: none"> <li>• Locate school away from rivers.</li> <li>• Provide information and communication, guidelines</li> <li>• Adopt policies &amp; guidelines for addressing education during LIH</li> </ul>	<ul style="list-style-type: none"> <li>• School remained at risk and vulnerable to low intensity hurricanes, floods and sea swell because of the absence of mitigation strategies.</li> </ul>	<ul style="list-style-type: none"> <li>• Revise codes and standards for the location of schools in light of LIH</li> <li>• Advise on the location of facilities: libraries and computer rooms and storage of school records in light of LIH</li> </ul>

TABLE 16 (Continued)						
<b>School building inspections</b>	To assess location and siting of schools and adherence to building codes and standard in the repairs and rehabilitation of school buildings	Theme: 10 Risk and vulnerabilities persists	<ul style="list-style-type: none"> <li>• 6 schools had no purlin to rafter ties</li> <li>• 10 schools &lt;300ft from ocean</li> <li>• 5 schools &lt; 100ft from ocean</li> <li>• 5 schools within 5ft of cliffs</li> <li>• 8 school had records located downstairs/ elevated downstairs</li> <li>• 10 libraries and 9 computer room located downstairs or elevated downstairs</li> </ul>	<ul style="list-style-type: none"> <li>• Violation of Building codes and standards during repairs and rehabilitatio ns</li> <li>• Risk and vulnerabiliti es of buildings and facilities persisted</li> <li>• School records were held in conditions that made them vulnerable to low intensity hurricanes</li> </ul>	<ul style="list-style-type: none"> <li>• Inadequate supervision and enforcement of building codes may be the issue</li> <li>• Topography and size makes it difficult to locate school and facilities</li> </ul>	<ul style="list-style-type: none"> <li>• Increased supervision during construction and repairs</li> <li>• Train contractors in the significance of building codes and standards</li> <li>• Enforce sanctions for violations of codes and standards</li> </ul>

## APPENDIX A

### DOCUMENT REVIEW SCHEDULE

<b>Children, Learning and Chronic Natural Disasters in the Commonwealth of Dominica</b>							<b>1</b> Dissertation Research Instrument
<b>Document Review schedule</b>							
1. What key disasters-related or education emergency words or terms appear in each policy document?							
Documents	No. of pages	Key words and terms					
2. What are the policy themes and issues highlighted by these key words and terms deduced from these documents?							
Key word and terms		Themes					
3. How frequently do these words, terms, themes and issues appear in each policy documents?							
Documents	Frequency of Key words, terms, themes and issues						
4. How do these themes reflect the policy positions on disasters or emergencies in general or education emergencies in particular?							
Key themes and issues		Policy positions					
5. Which, if any, of these themes are fiscal in nature?							
Fiscal themes		Pre or post emergency					

Primary Reviewer \_\_\_\_\_  
 Support Reviewer (If Applicable) \_\_\_\_\_

## APPENDIX B

### INTERVIEW SCHEDULE FOR SCHOOL PRINCIPALS

<b>Children, Learning and Chronic Natural Disasters in the Commonwealth of Dominica</b>		<b>1</b> Dissertation Research Instrument
<b>Interview School Principals</b>		
<b>Participant Characteristics</b>		<div style="border-bottom: 1px solid black; margin-bottom: 5px;">Primary Interviewer</div> <div style="border-bottom: 1px solid black;">Support Interviewer (if Applicable)</div>
1. Name of person being interviewed _____		
2. Name of School _____		
3. What is your job title? _____		
4. How many years have you been in your current position? _____		
5. What is your gender? <input type="checkbox"/> Male <input type="checkbox"/> Female		
<b>General Questions: Service Delivery</b>		
6. Which of was the last hurricane to affect your school? _____		
a. <input type="checkbox"/> Dean    b. <input type="checkbox"/> Omar    c. <input type="checkbox"/> Ophelia    d. <input type="checkbox"/> Other (please specify) _____		
7. How was your school affected or impacted?		
8. Which of these damages were addressed?		
9. How was the Ministry informed of the damages?		
10. How were you able to communicate the damages?		
11. How soon after the hurricane, were the damages addressed?		
12. Who addressed these damages?		
13. How satisfied are you with the manner in which the damages were addressed?		
14. If you are satisfied, please specify your satisfaction		
15. If you are dissatisfied, what do you think should have been done differently		
16. Have the MOE not addressed any of these damages? (Please check (X))		
17. If they were not addressed by the MOE, did others address them? Who?		
18. Would you share any steps that you took as a principal to minimize problems caused by LIH in the recent past		
19. Do you have any suggestions for the MOE that might be able to minimize damages and the problems caused by LIH in the recent past		
<b><u>THANK YOU</u></b>		

## APPENDIX C

### SCHEDULE FOR INSPECTION OF SCHOOL BUILDINGS

<b>Children, Learning and Chronic Natural Disasters in the Commonwealth of Dominica</b>		<b>1</b> Observation Research Instrument
<b>Inspection schedule for school buildings (To be completed by researcher)</b>		
1. Name of school _____	<div style="border: 1px solid black; padding: 5px; margin: 0 auto; width: 80%;">_____ Primary Inspector _____ Support Inspector (If Applicable)</div>	
2. Name of Principal _____		
3. Enrollment _____		
4. Year of construction _____		
5. Name of agency that funded construction _____		
6. Condition of building		
a. Construction material of Walls		
Solid Concrete blocks		<input type="checkbox"/>
Designed concrete blocks		<input type="checkbox"/>
Wooden		<input type="checkbox"/>
Part concrete and wooden		<input type="checkbox"/>
General comments on condition _____		
_____		
b. Type of Windows		
Wooden		<input type="checkbox"/>
Glass		<input type="checkbox"/>
Metal		<input type="checkbox"/>
General comments on condition _____		
_____		
c. Roof		
Concrete		<input type="checkbox"/>
Wooden		<input type="checkbox"/>
Combination of concrete & wooden		<input type="checkbox"/>
d. Do Ties exists(Please Check (X))    Yes/fully    Yes/partially    No		

Roof to purlins	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Purlins to ratters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rafters to ringbeam	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rinfbams to walls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walls to floor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Floor to foundation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Foundations to ground	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

General comments on Condition \_\_\_\_\_  
 \_\_\_\_\_

7. Location of selected facilities within the building

- a. School records \_\_\_\_\_  
 b. Computer rooms \_\_\_\_\_  
 c. Library \_\_\_\_\_

8. Location of school building

- a. Proximity to rivers      Yes/No      Distance from river bank \_\_\_\_\_  
 b. Proximity to the ocean      Yes/No      Distance from high water mark \_\_\_\_\_  
 c. Proximity to cliffs      Yes/No      Distance from cliffs \_\_\_\_\_

9. Comments on drainage on the school compound \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

10. General comments on conditions \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**THANK YOU**

## APPENDIX D

### ELITE INTERVIEW SCHEDULE

<b>Children, Learning and Chronic Natural Disasters in the Commonwealth of Dominica</b>		<b>1</b> Dissertation Research Instrument
<b>Elite Interview schedule</b>		
<b>Participant Characteristics</b>		
1. Name of person being interviewed _____	<div>Primary Interviewer</div> <div>Support Interviewer (If Applicable)</div>	
2. Name of Ministry _____		
3. What is your job title? _____		
4. How many years have you been in your current position? _____		
5. What is your gender? <input type="checkbox"/> Male <input type="checkbox"/> Female		
<b>General Questions:</b>		
6. How much of a problem do you think chronic low-intensity hurricanes (LIH) are for Dominica?		
7. How do these affect the way you operate normally? Which of these effects are communications, resources and service delivery-based?		
8. How would you assess damage done to the educational system because of chronic LIH?		
a. How well equipped, do you think, the country is currently in managing LIH?		
i. Are they about the same, less or more? If less or more, how much less or more?		
9. What typical education system related problems are created for your ministry due to LIH?		
10. How does your office or ministry currently prepare for/responds to LIH?		
a. With which agencies/department do you communicate or work as a result?		
11. Could you give me an example of how your office linked with donors, MOE, MPW during a relatively recent LIH?		
12. What have been your biggest obstacles recently in response to a LIH?		
a. Which ones are resource-based? Which are communication-based? Which ones are service delivery-based?		
13. Who are the major players needed to help overcome some of these obstacles?		
14. From your vantage point what possible solutions exist to overcome these obstacles?		

## APPENDIX E

### SUMMARY OF DATA COLLECTION AND ANALYTIC STRATEGIES FOR EDUCATION AND LIH

Research Propositions	Data collection method	Documents or Respondents	Data types	Information	Analysis	Cross-references/ corroboration/ tensions
1. Because low-intensity hurricanes are recurrent, Dominica has in place explicit policies that anticipate and guide action for low-intensity, chronic education emergencies.	Review of policy documents	<ul style="list-style-type: none"> <li>• Medium Term Growth &amp; Social Protection Strategy (GSPS), 2006 &amp; 2008</li> <li>• Education Development Plan 2003-2010</li> <li>• School Plant Maintenance Policy</li> <li>• Dominica National Plan to Reduce Vulnerability of School Buildings to Natural Disasters</li> <li>• Disaster Act (s)</li> <li>• Education Act, 1997</li> <li>• Budget Addresses 2005 -2010</li> </ul>	<ul style="list-style-type: none"> <li>• Policy themes</li> </ul>	<ul style="list-style-type: none"> <li>• Key emergency words and themes like vulnerability, risks, mitigation, response, recovery, preparation</li> </ul>	<ul style="list-style-type: none"> <li>• Latent and manifest thematic analysis</li> <li>• Classifications of themes into pre and post emergency policies</li> </ul>	<ul style="list-style-type: none"> <li>• Interviews with stakeholders in the field of finance, education and public works</li> </ul>
	Interviews with stakeholders in the field of finance, education and public works	<ul style="list-style-type: none"> <li>• Minister for Finance, Financial Secretary &amp; Budget Controller</li> <li>• Minister for Education, Chief Education Officer &amp; Senior Accounts Officer</li> <li>• Senior Architect, Senior Engineer, Senior Quantity Surveyor</li> </ul>	<ul style="list-style-type: none"> <li>• Policy themes</li> </ul>	<ul style="list-style-type: none"> <li>• Key emergency words and themes like vulnerability, risks, mitigation, response, recovery, preparation</li> </ul>	<ul style="list-style-type: none"> <li>• Latent and manifest thematic analysis</li> <li>• Classifications of themes into pre-emergency and post-emergency policies</li> <li>• Explanation building</li> <li>• Comparative analysis</li> <li>• Network analysis</li> </ul>	<ul style="list-style-type: none"> <li>• Review of policy documents</li> </ul>
2. The Government of the Commonwealth of Dominica has adequate financial resources to address low-intensity, chronic education emergencies.	Review financial and maintenance documents	<ul style="list-style-type: none"> <li>• Financial estimates, 2005 – 2010</li> <li>• School maintenance estimates, allocation and expenditure, 2005-2010</li> </ul>	<ul style="list-style-type: none"> <li>• Revenue and expenditure</li> <li>• Estimates and costs</li> </ul>	<ul style="list-style-type: none"> <li>• % allocated to education</li> <li>• Distribution of education budget</li> <li>• Estimates-allocation-expenditure gaps</li> </ul>	<ul style="list-style-type: none"> <li>• Time-series analysis</li> <li>• Trends</li> <li>• Gap analysis</li> <li>• Basic statistical analysis</li> </ul>	<ul style="list-style-type: none"> <li>• Interview with stakeholders in the field of finance and education</li> </ul>
	Interview with stakeholders in the field of finance and education	<ul style="list-style-type: none"> <li>• Minister for Finance, Financial Secretary &amp; Budget Controller</li> <li>• Minister for Education, Chief Education Officer &amp; Senior Accounts Officer</li> </ul>	<ul style="list-style-type: none"> <li>• Financial Themes</li> </ul>	<ul style="list-style-type: none"> <li>• Total cost of LIH damages to education sector/time</li> <li>• Adequacy and inadequacy of funds</li> <li>• % of funds</li> </ul>	<ul style="list-style-type: none"> <li>• Time-series analysis</li> <li>• Explanation building</li> <li>• Thematic analysis</li> <li>• Comparative analysis</li> <li>• Network analysis</li> </ul>	<ul style="list-style-type: none"> <li>• Review of financial and maintenance documents</li> </ul>



## APPENDIX E (Continued)

					allocation to low-intensity education emergencies		
3.	The education sector in Dominica receives top funding priority during low-intensity, chronic emergencies.	Interviews with stakeholders in the field of Finance	<ul style="list-style-type: none"> <li>Minister for Finance, Financial Secretary &amp; Budget Controller</li> </ul>	<ul style="list-style-type: none"> <li>Financial Themes</li> </ul>	<ul style="list-style-type: none"> <li>List of priorities</li> </ul>	<ul style="list-style-type: none"> <li>Explanation building</li> <li>Comparative analysis</li> </ul>	<ul style="list-style-type: none"> <li>Review contract documents</li> </ul>
4.	Services delivery for low-intensity, chronic education emergencies in Dominica are timely and efficient.	Review contract documents  Survey  Inspection of school buildings	<ul style="list-style-type: none"> <li>Contract documents for school repairs</li> <li>Estimates of damages</li> <li>12 school principals</li> <li>12 schools repaired after Hurricane Dean</li> </ul>	<ul style="list-style-type: none"> <li>Costs and extent of damages</li> <li>Extent of damages and repairs</li> <li>Policy perception</li> <li>Time of repairs</li> <li>Building codes and standards</li> <li>Location aspects of schools</li> <li>Location aspects of facilities in schools</li> <li>Photographs</li> </ul>	<ul style="list-style-type: none"> <li>Estimates - repair gaps</li> <li>Extent of damages</li> <li>Estimates of damages</li> <li>Cost of repairs</li> <li>List of damages and repairs</li> <li>Timeliness of repairs</li> <li>Range of perceptions</li> <li>No. of schools that meets codes and standards</li> <li>Location of schools in relations to hurricane risk features (sea, rivers, landslides) and vulnerability to flooding, sea swells and landslides</li> <li>Location of libraries, computer rooms (top floor, ground floor) &amp;</li> </ul>	<ul style="list-style-type: none"> <li>Basic Statistical analysis</li> <li>Gap analysis</li> <li>Timeliness of delivery</li> <li>Survey analysis</li> <li>Explanation building</li> <li>Gap analysis</li> <li>Proximity index</li> <li>Location Quotient</li> </ul>	<ul style="list-style-type: none"> <li>Interview with stakeholders in the field of finance</li> <li>Survey with school principals</li> <li>Review of contract documents</li> <li>Inspection of school buildings</li> <li>Interviews with stakeholders in the field of public works and education</li> <li>Surveys of school principals</li> <li>Review of contract documents</li> </ul>

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APPENDIX E  
(Continued)

vulnerability to

flooding

Interviews with stakeholders in the field of public works and education	<ul style="list-style-type: none"> <li>• Senior Architect, Senior Engineers, &amp; Senior Quantity Surveyors</li> <li>• Chief Education Officer &amp; Building Maintenance Officer</li> </ul>	<ul style="list-style-type: none"> <li>• Service delivery Themes</li> <li>• analysis</li> <li>• Building codes and standards</li> <li>• Processes and issues in service delivery</li> </ul>	<ul style="list-style-type: none"> <li>• Key themes on service delivery</li> <li>• List of codes and standards compared to in</li> <li>• List of issues and processes</li> </ul>	<ul style="list-style-type: none"> <li>• Thematic Analysis</li> <li>• Gap analysis</li> <li>• Explanation building</li> <li>• Process mapping</li> <li>• Comparative analysis</li> </ul>	<ul style="list-style-type: none"> <li>• Inspection of school buildings</li> <li>• Surveys of school principals</li> <li>• Review of contract document</li> </ul>
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## APPENDIX F

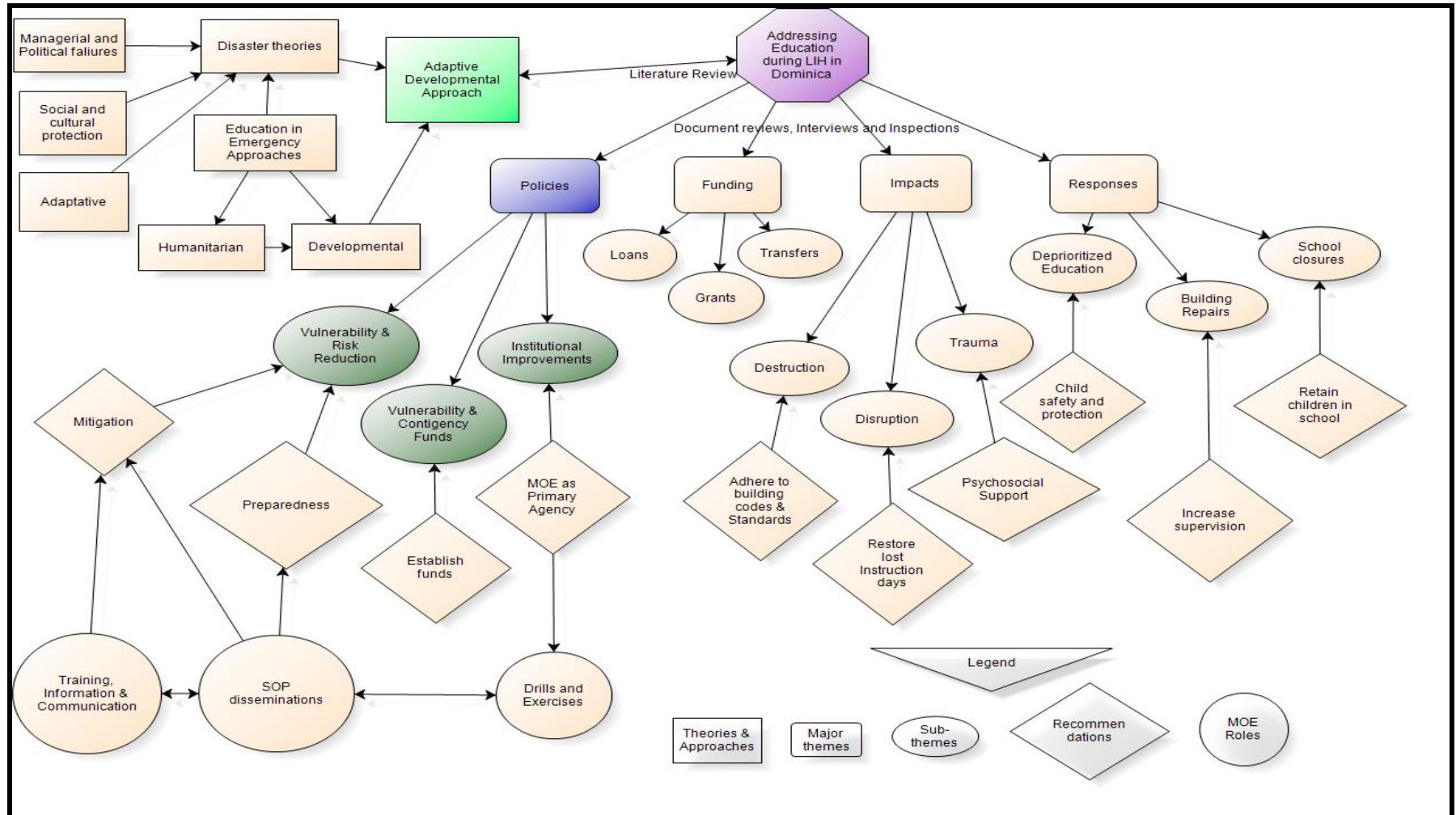
### STATUS OF REPAIRS ON SCHOOL DAMAGED BY HURRICANE DEAN 1997, DOMINICA

<i>ESTIMATES FOR DAMAGE ASSESSMENT OF SCHOOLS</i>			
<b>School &amp; Designated Contractor</b>	<b>Damage</b>	<b>Estimate (\$)</b>	<b>Status: 12 Sept. 2007</b>
Salisbury Primary School	Office (lower building) - 1 sheet galvanize removed, guttering broken	\$88,622.23	Contractor has difficulty obtaining tax clearance
<b>RJ</b>	Upper building - entire roof and ceiling removed		
Mahaut Primary School	One landslide at the back of the southern end and rocks inside one classroom. Galvanize shed at the front part partly broken off, guttering also broken	\$20,000.00	Ongoing
<b>PJ</b>			
Goodwill Secondary School	Roof of computer lab affected. One classroom affected, 3 computers waterlogged and damaged	\$25,000.00	Completed except computers
<b>SJ (Digicel)</b>			
Wesley Primary School	All the guttering around the school removed and damaged	\$6,801.88	Need to sign contract
<b>MD</b>			
Pierre Charles Secondary School	Ceiling of the auditorium damaged	\$60,000.00	Completed
<b>MH</b>			
North East Comprehensive School	Counseling room ceiling cave in	\$51,250.00	Contractor signed contract last week
	Library door broken		
	Clothing and textile room/door		
<b>Calvin Thomas</b>	Windows in staff room are broken		
Marigot Junior School	Small section of roof affected	\$45,324.15	Contract not signed
<b>EG</b>			
Vieille Case Primary School	Roof and lunch shed removed	\$17,257.40	will be completed next week
<b>PC (Digicel)</b>			

Wills Strathmore Stevens School	One window broken off and window damaged	\$3,000.00	not signed
<b>DG</b>			
APPENDIX F (Continued)			
Soufriere Primary School	Roof affected about three galvanize sheet removed. Debris in yard and tree fell in the block section, two classrooms may be affected	\$5,000.00	To be repaired by Basic Needs Trust Fund
<b>BNTF</b>			
Isaiah Thomas Secondary School	Eastern core house galvanize lifted	\$5,153.65	Completed
	Vehicular access road to the school almost impassable		
	Few fallen trees		
	Seriously damaged fowl house used for agriculture classes		
<b>EC</b>			
	About three (3) damaged doors		
Woodford Hill Primary School	Broken windows at the school library and in two classrooms	\$10,500.00	Contractor signed contract last week
<b>CT</b>			
	A number of ceiling piles got water logged and are currently suspended, taking some of the lighting fixtures with them		
Sub Total		\$337,909.31	
add 40% Labor Cost		\$135,163.72	
Add 15%Contigency		\$50,686.40	
<b>TOTAL</b>		<b>\$523,759.43</b>	

## APPENDIX G

## NVIVO MODEL OF EDUCATION DURING LIH, DOMINICA



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